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PRELIMINARY REPORT OF THE
LONG RANGE PLANNING COMMITTEE FOR
THE URBANA-CHAMPAIGN CAMPUS



The University of Illinois - Urbana - Champaign Campus
Office of the Vice Chancellor for Academic Affairs
February 1970



LONG-RANGE PLANNING COMMITTEE FOR

THE URBANA-CHAMPAIGN CAMPUS:

MEMBERS

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J. M. Atkin
M. H. Brucker
R. V. Evans
H. S. Gutowsky
G. Hendrick
G. G. Judge
G. W. Salisbury
M. Wagner

STAFF

A. F. Graziano
W. E. Stallman
L. B. Wetmore
A. R. Williams

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PREFACE

The history of plans to develop the Urbana-Champaign campus of the University of Illinois dates from the founding of the University. Had any one of several plans been carried through as conceived, it would have failed to meet the requirements of the campus as they evolved during that particular planning period. Since this was the repeated fate of long-range planning in the past, long-range planning in a more rapidly changing era requires a broad, open-end treatment. In itself long-range campus planning is no be-all and end-all. Details to formulate the future of the Urbana-Champaign campus will be developed on a continuous and systematic basis. Planning must be an on-going, analytical process in all segments of our campus community. Although the University has in the past developed its educational policies and physical resources as somewhat separate entities, future planning will provide for physical development that is based on educational policy.

The Long-Range Planning Committee for the Urbana-Champaign Campus was formed in February 1969 with a twofold purpose: (1) To meet the request of the Illinois State Board of Higher Education that each publicly supported institution submit with its next budget request (FY 1971) a long-range program and building plan for 1971-1980 and a campus land-use plan for 1971-1985. (2) To establish for the University an organizational form and system by which various members (both staff and students) of the campus community can participate in a continuous planning process. The Committee has prepared a preliminary document that should provide a flexible basis for the formulation and development of future academic programs. Setting goals;

selecting proper courses of action and appropriate organizational forms; discussing future enrollments, innovative programs, and adventuresome educational policies are essential aspects of the maintenance of the quality and vitality of the University.

The Long-Range Planning Committee for the Urbana-Champaign Campus is made up of nine faculty members, one graduate student, one undergraduate student, and several staff members who assist the Committee by providing expertise in the consideration of spatial and aesthetic aspects of campus development and in preparation of planning and budgeting systems, manpower forecasting, and models for academic decision making. Special studies have been commissioned by the Committee and others are planned. Subcommittees are currently examining or initiating studies, for example, ^① on the admissions quota system, ^② the establishment of interdisciplinary units, the improvement of undergraduate education, and the role of the postdoctoral associate. Other subcommittees will be appointed as needed to study selected areas, representative of the wide variety of campus interests, and to make proposals that will become important components of the long-range plan.

The planning process that is evolving for the Urbana-Champaign campus has two important aims:

1. To obtain from the faculty, the students, the colleges and departments an expression of opinions and views concerning institutional goals and objectives. The continuing sampling and study process is designed to establish a broad base of desired objectives.
2. To establish an administrative structure by which the information collected on institutional goals and objectives can be effectively

used in obtaining and allocating the resources needed to achieve those goals and objectives.

It should be emphasized that (1) the planning process for our campus will never be complete; (2) our institutional goals are in a continuous process of evolution and must constantly be reevaluated by the development of alternative means of achieving them; and (3) the allocation of limited resources to meet unlimited demands will require constant, careful evaluation of priorities.

Planning recommendations will take into consideration inputs from various sources. The Long-Range Planning Committee will circulate on campus each year a report that will review the progress of the campus and evaluate its movement toward priority objectives. At the same time, the Committee will continue to formulate new priority objectives that have emerged as a result of external and internal developments in the campus community, for the planning function of the Committee includes not only active response to accepted needs and desires of its constituents but also the initiation of responses to anticipated needs and desires.

To collect inputs to the initial policy development, substantive guidelines for long-range academic planning were issued to all Urbana-Champaign campus units by the University and the campus administration. Each campus unit was asked to make a careful, rigorous examination of its present structure and future needs so that requirements for new programs and expected developments could be documented as completely as possible. Each unit was also asked to give particular consideration to the problems of establishing and maintaining high-quality programs. This initial step produced a chain reaction: the recognition that intelligent and meaningful

planning cannot be sporadic led to the organization of planning committees by many departments and almost all colleges that has resulted in a campus network for planning and budgeting.

A questionnaire, intended to provide information about faculty opinion concerning the long-range development of the campus, was circulated to the entire faculty. Their response was large and gratifying, and analysis of their answers has provided important insights into policy development. A similar questionnaire will be prepared and circulated to the faculty every year.

Several standing committees concerned with particular problem areas on campus were asked to provide planning recommendations for each of their spheres of interest. The Educational Policy Committee of the Faculty Senate is studying a recommendation to include future activities of the Long-Range Planning Committee as a function of the Faculty Senate. One ad hoc committee is formulating policy for use in developing enrollment projections for the various academic disciplines. Another ad hoc committee is investigating the future availability of housing for married students. The intent in assigning certain responsibilities to committees made up of faculty, students, and ^②administrators is to ensure that each problem will be tackled by those members of the campus community who are closest to it.

The output of the Long-Range Planning Committee will include a periodic ordering of priority programs and recommended courses of action for the improvement of existing functions and for the initiation of new intellectual endeavors on the Urbana-Champaign campus. The recommendations of the Committee will be based on the existing as well as the predicted campus

environment. They will also take cognizance of shifts in the goals of the state and the nation. In all its deliberations and recommendations, the Committee will endeavor to enhance educational quality at all levels.

I. HISTORICAL PERSPECTIVE

Before 1930 campus planning at the University of Illinois was characterized by three elements: (1) a rigorous location of buildings and disciplinary functions within those buildings along established basic lines of geographic expansion; (2) a style of neo-classical architecture, adopted because it was envisioned as a style capable of expansion as the University grew; (3) a comprehensive landscape plan to serve as a unifying element for the whole campus. During the first sixty-three years of the history of the University, campus planning was concerned primarily, but by no means exclusively, with its physical features: structure, style of structure, location of structure, and landscape around structure.

From the earliest times, the University of Illinois was concerned *been response to ZHU*
that its physical structure complement and reinforce its primary mission
of educating youth in an environment conducive to learning. In a 1903 address to the University Board of Trustees, George W. Bullard, a trustee, discussed the significance of campus planning as it related to students.

It is recognized that the growth of the University will in the future be a gradual expansion of present colleges and departments. This will require more buildings and a corresponding increase in grounds for the movement and recreation of students. It is the pride of our University that our grounds are roomy and with ample space between buildings for extensive avenues, walks, greensward, shrubbery, and spreading trees. These conditions give a charm to the work of the student and inspire and develop the best feelings of his higher nature.

...crowding should be permitted only when it is impossible to avoid it, and should never be permitted among the most valuable assets of humanity. The best life of the students requires room for movement and activity. This room is necessary to enable the University to do its greatest work for its students,

and more truly is it so as regards those students who come from farms and country places and who expect to return to them after their college course is ended.

The year 1903 is notable as the year in which the first formal, systematic steps were taken to prepare studies and plans for the future development of the Urbana-Champaign campus as a whole. From that year the records reveal that the Board of Trustees, the alumni, and the faculty "stood strongly for putting the University of Illinois abreast of the greatest in the country."¹

The six decades to 1930 witnessed a significant expansion of effort in the University's educational mission. From its beginnings as a land-grant university intent on meeting the needs of an agrarian, rural society it enlarged the scope of its mission to provide for and sustain the needs of an embryonic but rapidly growing technocratic and urban society.

David Kinley in a letter accepting the presidency of the University wrote,

On the educational side it will be necessary for us to look forward early to a large development in the colleges of Engineering, Agriculture, and Medicine, while at the same time making adequate provision for other colleges. I have particularly in mind the better support of the Colleges of Commerce and of Education. We shall need also to do something more for the College of Law, the School of Music, and the Library School; and, it goes without saying, that we must keep step with the needs of the State and the country in our department of Liberal Arts and Sciences.

It was indeed during this 63-year period that the University of Illinois established its long tradition of service to the state and the nation.

The systematic growth of the University was impeded during the First World War when "the University was fully engaged in such wartime activities as were in demand by the State and Nation,"¹ and there was

neither time nor money for University expansion. The 1920s, however, witnessed a renewal of existing academic programs as well as the provision for development of new disciplines to meet future "demands that come upon us," said Kinley in his letter accepting the presidency of the University. Kinley had also called for a plan of "campus and building development looking as far into the future as we can wisely plan."

In considering the task of the Long-Range Planning Committee, and for that matter all future planning, perhaps the most significant statement of experience on the history of planning is the following:

In this long evolution of the development of the Campus Plan there have been many mistakes; the growth of the University has constantly outstripped the imagination of those in control of its destinies and has rendered futile plans built on anything but the broadest and most liberal scale. Had the fathers of the institution foreseen the modern University, could the present generation look far beyond its own time, the plan as it now stands would undoubtedly be vastly different in many respects. The foresight of human beings, however, is of necessity limited. "We shall be fortunate if fifty years hence there is not far more evidence of our having been unable to forecast the future, than there is now of the lack of imagination on the part of the first builders of the University."¹

Following the difficult and lean 1930s and just before the end of the Second World War, the University addressed itself to the new demands being placed on higher education by the whole of the society. A surge of returning veterans was expected to enroll at the University. Acceleration of technical invention and the new and expanded industries required a flow of manpower and knowledge to sustain in peacetime the industrialized might the country had attained in wartime. The nation's entire educational system had suffered from involvement in the war, and the state system of education at all levels required attention.

As early as July 1943, a Committee on Future Programs was appointed to study "what should be done on a long-term basis to improve and strengthen the educational programs of the University." This committee was directed to "seek to establish the educational aims of the University and its various colleges and schools in relation to their physical, economic, social, intellectual, and cultural environment, and to project programs that will promote these aims...." New programs were investigated and the committee offered specific recommendations concerning certain of these, but the committee's greatest contribution came by way of proposed methods for organizing to accomplish the university's major responsibility of teaching, research, and public service of an educational nature. *not h. gone*

In 1945 the Committee on Future Programs called for a functional orientation of program management cutting across the entire campus as a supplement to the traditional management centered about the historic departmental organization. Formal classroom instruction and curriculum design were to continue to be primarily a departmental responsibility; and each graduate research program in a particular discipline would continue to be managed by the applicable department. But those research programs which included several disciplines were to be managed through faculty councils created for the particular needs of the faculties involved. The councils were to provide their own management and direction, but in concert with departmental research interests and programs rather than in competition with them. The programs administered by the councils would be budgeted to the extent that support was required to provide a program nucleus, but each department would contribute a share of its budget to that research program in which any of its faculty was involved.

The public and extension services of the University were to be real and actual outposts of the University's resident research and teaching programs. The Committee on Future Programs recognized that the University's three main missions (education, research, and public service) could not be accomplished without the flexibility provided by central control, supported by a decentralized management of each particular discipline and interdisciplinary activity. In a historic statement, as applicable today as it was in 1945, the committee described the future role of the University in a world in which it was no longer possible for any university or for society to view poverty, malnutrition, unemployment, and industrial strife with complacency.

Such manifestations of social deficiencies as high rates of juvenile delinquency, illiteracy, or preventable disease become matters of immediate military urgency in time of war; in a world where distances are shrinking, where unification of political power is the order of the day, they will remain increasingly important. The task of the University, therefore, in the postwar period is so to perfect its educational services that it will prepare men and women able to further and to enjoy a community in which they will be more than ever responsible members. Such an emphasis upon social responsibility in no way conflicts with the University's duty to educate for individual advancement. The University can fulfill its obligations to the state by taking with utmost seriousness its primary duty of acquiring and transmitting reliable knowledge of facts, techniques, and values--and not to a "state" of "nation" considered abstractly, but to those men and women who come under its influence. The most reliable index of the University's success is the quality of its graduates.²

index of
success

The far-reaching implications of the work of the Committee on Future Programs can be realized only through a thorough study of its 1945 report. It is the charter on which the University has built its eminence during the past twenty-five years. The salient points of the report are contained in Appendix I.

During the decade following the Second World War, various constituents of the State of Illinois called for statewide planning in higher education to meet the demands being imposed upon higher education by the social changes taking place: the emerging educational aspirations of the citizens of the state as the shift from blue-collar wage earners to white-collar salaried employees accelerated; the increasing percentage of youth in the total population; the demand for professional and technical employees to satisfy the changing needs of new and old industries. Two significant attempts were made to develop statewide planning in higher education.

The first was the Joint Council on Higher Education, a voluntary attempt on the part of the state's institutions of higher education to integrate into an informal body for the purpose of promoting exchange of information and views, without infringing on the individual appropriation requests or educational policy of member institutions. This effort was, however, not *failure* very successful because the institutions were constantly competing with one another for state support.

The second was the Commission on Higher Education, created in 1957 by the state legislature and appointed by the governor to deal with the many urgent questions that seemed to lie ahead for higher education in the State of Illinois. The Commission's task was to initiate various studies relating to the state's institutions of higher education, either individually or collectively. This was a real beginning in the direction of coordinated plans for development of a statewide system of higher education.

In the light of this ferment of planning for the future, the University of Illinois appointed in 1957 a University Study Committee on Future Programs. This committee was asked to prepare guidelines for future development of the

University, to formulate objectives and points of emphasis, and to suggest programs for implementation of the recommendations made. The committee was described by President David Henry as "a medium for institutional self-examination, along certain broad outlines with suggestions for next steps in overall educational planning."

The Study Committee on Future Programs directed its efforts toward the future role of the University of Illinois in the state's total program of higher education. Statewide planning had not proceeded far enough in 1957 to indicate the roles of the several institutions involved, nor was it clear what amount of state resources would be committed to support higher education.

In determining the future functions of the University, the committee emphasized the responsibilities that the University could best fulfill by reason of its history and reputation. It was assumed that statewide educational developments would tend toward wider sharing of undergraduate education with private and public institutions other than the University of Illinois, especially at the freshman and sophomore level. It was assumed that the University would continue to be the principal public institution with comprehensive programs at advanced levels in the fundamental fields of learning and in the professions. Although the spectrum of the University's activities would continue to be broad, the committee stated that the chief functions of the University, as the state's educational system developed, were the following:³

1. Teaching, research, and scholarly and creative activity in the fundamental fields of learning.
2. Teaching and research in professional and occupational areas closely dependent on the fundamental fields of learning.

Good
for
paper ✓

3. Liberal education of able young men and women who do not intend to become highly trained specialists and, to the extent possible, of students aiming toward specialized or professional training.
4. Vocational training in fields which are clearly of substantial and wide importance to the state and nation, especially those which require four-year programs including sound preparation in the fundamental fields of learning and which the University is uniquely or best fitted to provide.
5. Extension education and essential public services which require the kinds and level of expertness represented in the faculty of the University.

The fundamental fields of learning were defined as mathematics, the biological and physical sciences, the humanities, the fine arts, and the social sciences. They were defined as fundamental "not only because they have long been studied for their own sake but also because they underlie most fields of applied knowledge." In the fundamental fields, it was contended, basic research is the source of every advance in the applied fields.

The committee recognized the trend toward proliferation of specialized curricula in response to society's increasing diversity of opportunities for vocational specialization. But it noted that the various applied and professional fields required a high degree of judgment and adaptability to new problems that could best be presented more usefully in studies in the basic knowledge underlying the particular profession rather than in the specialized courses in the techniques of the profession. The accumulation of knowledge and the complexity of modern society demanded, said the committee, that the highly trained person look beyond his specialty, even as he specialized.

For these reasons the University's professional and occupational curricula should be closely connected with the arts and sciences from which the applied fields stem. Some of the research carried on in a professional college may well be in a related basic field: research in the Colleges of Medicine or Agriculture may be fundamental biochemistry; of Law, history or government; of Engineering, physics; of Commerce, economics.

Thus it is the University's responsibility to provide professional education in those needed areas which by nature depend upon and in their programs stress the fundamental bases of the subject.³

The Committee related the role and responsibilities of the University to the question of the size and structure of the student body over the next decade. To accomplish the University's projected mission, the committee proposed a dramatic increase in the proportion of professional and graduate students. In the fall of 1957-1958 the distribution among freshman-sophomore, junior-senior, and graduate students was approximately 7500:7600:3500 or in the ratio of about 2:2:1. Within a total enrollment of 25,000 to 30,000 students on the Urbana-Champaign campus by 1969, the enrollment mix was to approach a ratio of 2:3:2. (In the fall of 1969-1970, the Urbana-Champaign campus enrolled 32,759 students in the ratio of 2:2:1.6; 11,883 freshman-sophomore, 11,548 junior-senior, 9,328 professional and graduates.)

The 1957 Study Committee on Future Programs therefore launched the Urbana-Champaign campus on a course leading to limited and very selective admission of lower-division and transfer students; increased capacity for graduate study and research in the fundamental fields of learning and in professional and occupational fields closely dependent on the basic fields; and sharing with all other educational institutions in the state the responsibility for assuring a sound program of higher education through a coordinated statewide system.

emphasis on Professional Work

II. THE UNIVERSITY AT URBANA-CHAMPAIGN DURING 1971-1980

Mission

With each passing year, the Urbana-Champaign campus becomes less able to correlate its mission to educate the youth of the state with the increasing numbers of students who seek admission. During the next decade this situation will continue since the resources available to this campus, no matter how effectively employed, will not satisfy the continually growing demand for higher education.

Predictions of the growth in the size of the college-age population, and the proportion of that population demanding college education through the most advanced degrees, are conservatively estimated to increase more in Illinois than in the nation.⁴⁻⁸ Our state faces the need to provide college education to some 60 to 65 percent more students in 1980 than in 1969. The increase for the fall of 1980 is based on a projected enrollment of about 659,000 on-campus students in this state as compared to an actual enrollment of 409,600 in the fall of 1969. And toward the end of the 1980s, it is likely that the proportion of Illinois students who are candidates for master's and Ph.D. degrees will increase more rapidly than those enrolled for the baccalaureate. Compounding these problems is the fact that Illinois, as a net "exporter" of college-bound youth, is surrounded by states that are net "importers."⁹ If certain resident quota restrictions are applied by our neighboring states, we can expect a higher proportion of our youth to demand admission to state-supported institutions of higher education in Illinois. There is some evidence that this may happen, since other states also face the problem of allocating scarce resources to their own priority needs.

Such possibilities raise a serious question: What proportion of the increasing demand for higher education is to be met in Illinois by each of the present colleges or universities, public and private? The answer is of great importance and extreme urgency to the children now in the Illinois public school system who will aspire to better educational opportunities at the higher level than are now provided by this state. Our children must be educated, at least as well as the average child in this country, if the State of Illinois is to maintain its collective competence, to create a climate for continued progress, and to share in solving the social and moral problems that concern the nation.

State

At the present rate of technological and scientific development, the store of knowledge doubles every ten years. Not only must students of the future learn more, teachers themselves must be continuously learning to keep their knowledge of their subject matter from becoming obsolete. The capacity of universities to provide an environment in which their teachers can learn will be a benchmark in differentiating the great from the ordinary university of the future. That university which provides its academic staff with time and facilities for scholarship and for relevant basic and applied research will be tomorrow's academic pacemaker, in public demand for national leadership in all aspects of human concern--whether in agriculture, education, business, government, industry, medicine, the arts, recreation, science, or in all of those areas relating man-to-man and man-to-environment.

It is the purpose of the Urbana-Champaign campus that the University of Illinois continue to develop as the academic pacemaker of higher education for the State of Illinois and in the nation.

State
purpose

The mission of the Urbana-Champaign campus during the 1970s must be examined in the context of our particular place in the entire State System

of Higher Education, a system which must not underestimate the rapidly increasing demand for continued democratization of the opportunities provided by higher education. Our primary and foremost function will continue to be education--the educating of research scholars, of "teachers of teachers," and of professional practitioners. The University of Illinois at Urbana-Champaign, the University of Illinois at Chicago Circle, and the University of Illinois Medical Center all share this broad mission of responsibility for teaching, research, and public service with the Illinois system of public and private colleges and universities, with the national system of public and private colleges and universities, and with a less formal international organization of institutions of higher education. The Urbana-Champaign campus is thus a vital part of a network of a state, national, and international exchange of manpower, knowledge, and service.

It is our intent that the Urbana-Champaign campus provide imaginative leadership in the effective pursuit of the following objectives:

1. The development of human resources through education

The educational experience is one of personal fulfillment and preparation for the life experience. In this sense the Urbana-Champaign campus shall endeavor to create the responsible manpower required for professional service; for industrial and economic development; for the educational enterprise; and for international, national, state, and local government.

At the undergraduate level, the quality of our programs must be exemplar. Although the expansion in student numbers is projected to be small at the undergraduate level, courses

and curricula content must be constantly appraised and revised to meet the needs of the future. The teaching of undergraduates must be accorded a high status if we are to provide the leadership in educational implementation at the undergraduate level.

The continued expansion at the graduate level will be geared to what our society can and must afford. New and improved graduate programs will be tailored to the needs of individual students as well as to the public they will serve. The University now ranks as one of the foremost graduate universities in America. Its continued growth in quality and in quantity will provide leaders in all major areas of national endeavor.

The broad span of our continued special contribution to the development of human resources requires comprehensiveness. The range, magnitude, and complexity of the educational function of the Urbana-Champaign campus provides a perspective essential to the educational environment in which tomorrow's leaders are developed. It provides a model of the complicated society which challenges our graduates.

2. The expansion and dissemination of knowledge through research and teaching.]

We contend that this is one of the better moments in man's history, and not at all one of the worst. In an era of conflict which derives from the confusing

dichotomy between our technological capacity and our societal aspirations, our nation seeks a model and a catalyst for social change, an expediter which can devote its energies to the resolution of the perplexing contemporary problems which have evolved from a period of fragmented national priorities. The Urbana-Champaign campus, eminently qualified as such an expediter, can contribute to the sound development of our society on all fronts simultaneously.

The educational process involves the teaching of principles and thought, but principles rapidly fade if not reconstituted with the fruits of intellect and research, and thought stagnates if not revitalized by imaginative and inspiring teaching. The unique educational process is a self-sustaining cycle. A continuing exchange between research and teaching in all of our varied disciplines will provide this campus with the environment essential to the expeditious and unique creation and application of new knowledge and educated manpower.

The Urbana-Champaign campus, if it is to preserve its uniqueness, must continue to revitalize its large spectrum of research programs and to improve its teaching function. The expansion of knowledge must be disseminated through the day to day function of teaching and publication. The faculty of the Urbana-Champaign campus assumes the collective responsibility for continuous learning through research and commits

itself to the personal and meaningful transference of this experience to the student body and to the public at large.

Our graduates must continue to distinguish themselves not only as contributors to the wealth of human knowledge, but as teachers, practitioners, and applicators of knowledge.

The graduates of the Urbana-Champaign campus must assume a responsibility to be the opinion makers of our society.

Role in the Illinois System of Higher Education

An institution of long history, tradition, and quality, the University of Illinois at Urbana-Champaign is recognized nationally as one of the distinguished group of universities characterized as centers of educational excellence. And in the state the Urbana-Champaign campus has established its position at the summit of a system devoted to achieving for every man and woman of Illinois access to a meaningful and productive higher education.

Yet, perhaps because of its tradition for achievement, these are times of trouble and search for the University. What is the role of the University in a troubled society, a society experiencing a revolution of human aspirations that are rising more rapidly, and more insistently, than our ability to cope with them?

While details vary, the citizens of the state, the students, the faculty, the administrators, and the trustees of the University are all saying the same thing--the University must develop a more vigorous thrust in its educational programs that is responsive to the problems of the times. Since the faculties, collectively, conduct educational programs in virtually every field of human knowledge, a major difficulty is the integration of this expertise in ways that will contribute to the larger, more intractable problems of society.

A very special and somewhat new problem is the necessity of balancing the demands for University involvement in social problems with the need to broaden the base and depth of quality-educational opportunities for an increasing population of young people who aspire to post-graduate education. The overall quality of state-supported higher education in Illinois has, therefore, become a greater importance and should be given the utmost attention. The University, as a large and prestigious member of the system of state-supported colleges and universities, has a particular place and special responsibilities within that system.

The University perceives for itself a role involving broad participation in the development of other state institutions of higher learning, a sharing of its excellence with the constituent parts of the whole system. This is a responsibility that gives recognition to the concept of educational quality as a goal of the entire system, unaltered by competitiveness among the individual members of that system for the same limited resources. It also recognizes that when compromises are made with quality the entire system suffers.

While it is acknowledged that differing missions may be described for each of the members or groups of members of the system, there is a common and pervasive need to build faculties, programs, and curricula that are most responsive to these missions. A very heavy price is paid by the citizens and the students of Illinois when this building process develops as a result of short term pressures and expediency. The development of quality programs takes time, requires great discrimination and selectivity as well as enlightened financial support.

The Urbana-Champaign campus by virtue of its history and present structure should serve the entire state in operations for the sharing of excellence. The University can help junior institutions of the state by producing the master teacher doctorates so desperately needed by them. This help could also include such operations as formal and informal faculty consulting to aid in program development, faculty exchange and summer institute programs to keep master teachers up-to-date, initiation of cooperative research to assist a school to launch new research, and so forth.

The role, then, of the University in the Illinois System of Higher Education should be one of innovation, and while the individual responsibilities of each member of the state system may be quite clearly stated and understood, cooperative development between the constituent parts should not be avoided or ignored. It is understandable that when each member of the system must compete with all the other members for resources there is a formidable obstacle to cooperation. But there is a higher-order responsibility--that of cooperation in most meaningful ways to better the entire system and to meet the demand for quality higher education throughout the state.

Relationship with State Board of Higher Education and Other State Institutions of Higher Education

To meet the needs of the state and nation for educated men and women and to maintain and enhance the excellence of the teaching, scholarship, research, and public service offered by the University of Illinois, it is proposed that (1) limitations be placed on the number of undergraduate students enrolled on the Urbana-Champaign campus during the 1970s and

(2) future growth in enrollment be primarily at the graduate and professional level. Supportive studies indicate that at all educational levels and in all disciplines the demand for admission to this campus in the 1970s will be significantly greater than the number who can be admitted. We cannot begin to meet this demand and still follow policies of admissions, building, staffing, and funding that would not be disruptive of the basic function of the University.

It is clear from the demographic data compiled by the University staff that an increasing share of the responsibility for higher education in Illinois must be carried by the public universities. But it is equally clear that the University cannot continue to enroll its traditional proportion of the total at Urbana-Champaign.

The 24,000 undergraduates at Urbana-Champaign represented in 1969 some 7 percent of all undergraduates enrolled in the state's institutions of higher education and 8.5 percent of all undergraduates enrolled in the state's public universities. A projected total of 24,000 undergraduates at Urbana-Champaign in 1980, however, would represent only about 4 percent of all undergraduates enrolled in higher education in the state with a corresponding drop in the percentage of undergraduates at Urbana-Champaign compared to all undergraduates enrolled in the public universities of the state in that year.

The Graduate College at Urbana-Champaign has traditionally enrolled a high proportion of all graduate students in Illinois public universities (approximately 70 percent of all advanced graduate students and about 28 percent of beginning graduate students since 1965). It is certain that the proportion of graduate students at Urbana-Champaign will decrease in relation to the publicly enrolled total in 1980.

During 1965-1969, the Urbana-Champaign campus enrolled approximately 12 percent of all beginning graduates in state institutions of higher education. This will drop to about 9 percent of all beginning graduates projected by 1980. During 1965-1969 the Urbana-Champaign campus enrolled about 40 percent of all advanced graduates in state institutions of higher education. This percentage should remain constant at 40, which is of major importance to the state, and emphasizes the key role of the Urbana-Champaign campus in higher education in Illinois. Of all the public institutions in the state, the Urbana-Champaign campus is particularly suited for expansion of enrollment at the advanced-degree level, because it is the only or primary source in the state for some disciplines.

The College of Veterinary Medicine at Urbana-Champaign, for example, is the only institution in Illinois offering any degree in Veterinary Medicine. The Urbana-Champaign campus is also the primary source of the most advanced degrees in such fields of agricultural science, chemistry, physical education, communications, and library science. It produces one-half, or more, of the most advanced degrees in engineering, physical science, physics, and commerce granted in the state. It produces one-quarter, or more, of the most advanced degrees in mathematical sciences, biological sciences, languages, humanities, education, economics, law, and psychology granted in the state.

Through gifts of alumni and friends, the Urbana-Champaign campus now has the outstanding university facility in the country for teaching and illustrating the performing arts--Krannert Center for the Performing Arts, which has become a brilliant arts and cultural center for mid-America.

The Urbana-Champaign campus has the largest and most diverse library facility in the state; and if the Chicago campuses of the University are

included, the University of Illinois library is third largest of the nation's academic libraries. The collections include about 4.5 million volumes, are notable for a great variety of fields, and are considered a national asset. The Urbana-Champaign campus is nationally recognized as an advanced center for computer development; and one of its computers--the Illiac IV--is considered a national resource because of its potential in such diverse fields as agriculture, medicine, urban planning, ecology, atmospheric science, and environmental science. Established and successful interdisciplinary centers provide the tactical experience necessary to meet the demand for research relevant to the problems of our society. A dedicated and renowned faculty with widely distributed interests constitute our most valued asset. Every effort should be made to share these attributes, for benefits that could be derived from sharing them with other institutions of higher education in the state can no longer be delayed. Attempts must, therefore, be strengthened:

1. To coordinate educational programs within the three campuses of the University of Illinois.

It is essential, for example, that future expansion of health education involve complete inter-campus administrative and faculty planning. Research programs that utilize the City of Chicago as a laboratory should proceed through systematic coordination by an inter-campus faculty medium.

Significant program coordination can occur only if faculties collaborate. Intramural "sabbaticals" for a semester or a year should be considered for the faculty of the three campuses. Such interaction of staff would provide all three

campuses with access to the special talents and strengths of each campus. It is desirable that faculty members resident at any one of the three campuses also become involved in teaching or in research at the other two campuses.

2. To avoid unnecessary duplication of educational and research programs and facilities within the state system.

The desire to share the University faculty and facilities in teaching and research extends to the entire state system. Although direct and needless duplication of educational programs must be minimized, useful overlapping and coordination must be encouraged. For example, a student with a baccalaureate from any one of our public institutions should be able to pursue graduate work at this or any other campus in the state system. It should also be possible for a graduate student at another state educational institution to avail himself of the outstanding facilities of the Urbana-Champaign campus in preparing his dissertation.

Statewide exchange of faculty at every level, including that of teaching assistants, should be considered, inasmuch as all teaching and teacher training programs in the state system would benefit from it. In this exchange, as in the other suggested areas of cooperation and coordination, the Urbana-Champaign campus seeks to assist in achieving for Illinois a state system of higher education with truly interlocking parts.

3. To further develop the junior college system.

The junior college occupies in Illinois, as in other states, a prominent place in educational planning. About 60 percent of the state's publicly enrolled lower-division college students are in the Illinois junior college system, and it is predicted that this percentage will increase a decade from now. As has been stated, the rapid increase in college-age youths and the projected rise in the enrollment rate of this segment of the population demand that the development of the junior college system in the state proceed with speed.

Because of its economic and geographic advantages, the junior college system provides opportunity for higher education to greater numbers of the citizens of Illinois. But economics should not obscure those essential educational considerations which, in the end, assure social and economic equality. Quality programs and adequate physical facilities must be assured if the junior college system is to fulfill its role.

The Urbana-Champaign campus must expand its programs to supply high-quality faculty for the junior colleges. This is undoubtedly the most pressing need of the junior college today, and a need to which this campus can address itself in a most meaningful way. An especially trained and dedicated faculty must be provided, for the educational standards of the junior college must be as high as that of the four-year liberal arts school to assure the transfer of students from one system to the other as desired. In the preparation of potential junior college

faculty, new doctoral programs should be developed in which the research dissertation might well be replaced by additional coursework in teacher education and other appropriate areas.

The "pipeline" between the junior college and the four-year college must be kept open and operated as smoothly and as efficiently as possible if the state is to realize a maximum return from the costs of this new opportunity for its youth. Program development at the four-year colleges must be carefully coordinated with junior college programs if students are to be successfully assimilated at the junior-year level. The Urbana-Champaign campus plans, in cooperation with junior colleges, to expedite the development of core curricula that will promote more effective and economic institutional articulation and student transfer.

Public Service

Today's large university is so complex that some of its essential features and functions are often obscured. The concept of a university as a community of scholars remains the correct and incisive description. Some members of that community contribute best to the university, the state, the nation, and the world in ivory-tower isolation. Many more, however, mingle in the marketplace, actively involved with, for example, the problems of agriculture, industry, government, medicine, the arts, and the improvement of man's physical and social environment.

Although traditionally divided into teaching, research, and public service, the functions of a great university, particularly a land-grant

university, are today inextricably meshed. It is perhaps this very "meshing" that has given the impression of public service as an area of university endeavor on its way out; or perhaps because the needs of the public are new or newly emerging, new definitions are needed for a university's old service roles or our conceptions of them. To many, today as in the past, the education of young men and women for life and careers is not only the teaching function of a university but also its highest public service. And just as research enriches teaching, so does public service, which might be better defined today as "the test of relevance," enrich and give relevance to both teaching and research. Public service in the broad sense is an essential guide to each individual in his teaching and research.

Increasing--as well as new--public needs, the growing complexity of social problems, and the demand for an easily identifiable access to the University's talents and services all call for the creation of a senior-level office capable of handling the public service responsibilities of the University of Illinois. This is an era when service to society must be given the same high regard as is the service given to students. Having raised educational levels and amassed more knowledge to apply, the University must now--in addition to the traditional Extension Division and those bureaus, centers, institutes, and other divisions whose service responsibilities are already spelled out--devise ways in which such knowledge may be disseminated for public use and benefit.

The primary responsibility of the proposed public service office would be to make available the fruits of those activities that do not fall within the scope of any one academic unit or that may include several academic units. Each of the academic disciplines of the Urbana-Champaign campus

must address itself to determining a desirable balance between basic research, with its long-term payoff to society, and applied research, with its short-term payoff. Pressures are mounting and the temptation is great to justify the activities of this campus in terms of an immediate panacea. If most of our efforts are directed toward stop-gap problem solving, we deny the potential of the University for achieving a better and fuller life for all.

Some of the areas in which the public requires new services from its University include:

1. Creation of a statewide network of continuing education centers for those who (a) wish to keep pace with new developments in their profession; and (b) seek off-campus graduate and undergraduate work as well as credit and non-credit instruction. Each center in the network would be expected to set up and manage particular programs peculiarly suited to the needs of its region, be it urban or rural, and its students, be they practicing professionals or vocational novices.
2. Creation of "social observatories" through which research can be turned into action in dealing with such situations as (a) the quality of family life as a key to the elimination of poverty, (b) the reduction of violence, and (c) the use of intercultural communication in problem solving. The Urbana-Champaign campus should "join other institutions of higher education in the State of Illinois in seeking the most effective cooperation, division of labor, and dovetailing of competencies to assure that social needs are met, and met by the educational

response which is most appropriate for both the need and the institution."¹⁰

3. Development of a range of cultural opportunities for the public which now has the leisure to participate in them. This would tap the humanities for responsibilities in public service that it has not heretofore shared.
4. Continued development of teaching by long-distance telephone coupled with computer systems, to make available to virtually every citizen in the state our most renowned teachers and researchers. Present telephonic multicity loops permit the transmission of both voice and writing--a very economic means of teaching--to several localities in the state. More of our academic units at Urbana-Champaign are urged to employ this method to increase the number of courses offered through the University Extension Division.
5. Continued development of educational television and radio as a source of public enlightenment in the arts, public affairs, recreation, and so forth. The cultural events--lectures, operas, symphonies, plays--that occur on the Urbana-Champaign campus could be shared with the rest of the state through telecasting or telefilm.
6. Expansion of the cinematographic program so that the library of films being produced on the Urbana-Champaign campus could be circulated to the citizens of the state through schools, churches, service clubs, and other outlets.

With this new public seeking new services--and only a few have been mentioned--the University must examine the adequacy of its response instead of debating over priorities.

Debate over priorities among the historic university functions has become obsolete. It is like debating the priority between the functions of the heart and the lungs. Vital processes do not have priorities. But the university is confronted with a dilemma: regarding the service role, its staff may have too little interest and the public too much. Anybody, and any group, may make university demands, and probably will, if special competence is thought to reside in the university. But the university, with limitations in both personnel and finance, cannot be all things to all people. It has to decide, therefore, on what things it wants to be to what people. It cannot escape making a selective response so as to be publicly understood and publicly defensible, while faithful to ... the university's total responsibilities, both internally and externally.¹¹

The University at Urbana-Champaign accepts as a major public service responsibility the generation of knowledge to better the world and to assist society in adapting to a changing world. While the Urbana-Champaign campus community should not be viewed as an entity designed for instant problem solving, members of that community do possess the basic knowledge needed to solve many of the problems, and to deny or ignore this vital function would be self-defeating. During the 1970s, the Urbana-Champaign campus will continue its long-standing commitment to provide public service in the belief that its long-standing commitment to provide public service in problem solving, will eventually prove as effective as did its pioneer efforts, begun a century ago, in the agricultural and industrial development of the state.

Relevance in a Changing World

The value of the educational process on the Urbana-Champaign campus to the changing world about us rests primarily on the generation of knowledge

and the education of practitioners to apply that knowledge. Many persons today, however, claim that education has no value without "relevance" to our societal ills. Increasingly, the relevance of the educational process at this and other institutions of higher education is being challenged and has been influenced by such national priorities as Vietnam and the draft, the changing expectations of students and the nation, and the sources of university support that involve research on products that are at the same time useful and detrimental to mankind, to name but a few.

For the past two decades national goals have motivated the rapid generation of knowledge in the pure and applied natural sciences. The national emphasis on the generation of knowledge and manpower has been sustained primarily by federal funds that have supported the education of researchers and research in defense, space, and health-related fields. This federal support of higher education in the basic and applied sciences has been achieved at the expense of the overall coincident development of our national ability to generate knowledge and practitioners in many other areas of academic endeavor. The limited supply of talent in those areas has limited our ability to deal with even so conspicuous a societal ill as the declining social mores and lack of ethical judgment around us.

There is, in some quarters, the naive opinion that technology is at the root of our societal problems and that technology can be temporarily forsaken for the good of society. The truth is that we will need more, not less, technology if we are to solve, say, the problem of overpopulation by increasing our food production, which is but one of a long list of problems. What is required is a deeper understanding of mankind in a world that is so busy solving the problems of producing material plenty

that we have lost the meaning, the purpose, and the enjoyment of life. Our inventions should be more than "just improved means to unimproved ends."

While a new set of national priorities is evolving that will rechannel the educational efforts of the universities, the process is slower than is desirable in the face of the existing and increasing need for change. What is required is a combination of the disciplinary strengths developed on this and other campuses over the past two decades with the development of new knowledge in those areas of academic pursuit that have lagged behind. The new educational endeavor will involve the reapplication of our strengths to social interaction, and the measure of success a decade from now will be the rate at which that new knowledge is generated and, to an even greater extent, applied by the people we educate.

In the new educational approach the Urbana-Champaign campus will expand its commitment to relevant research and graduate study for the doctorate. This does not imply that high-quality educational programs at the undergraduate or master's level will be sacrificed. The Urbana-Champaign campus will complement its educational programs through research which emphasizes inquiry into two very broad societal problem areas.

1. The improvement of the quality of life.
2. The development of human resources.

American institutions of higher education are not solely schools for the formal classroom instruction of students. They must also be centers for scholarly inquiry; they have an opportunity and a responsibility to expand knowledge as well as to expound it. Advanced undergraduate students as well as graduate students must be introduced to the very frontiers of knowledge in their principal fields of interest, and be given a glimpse into the vast unknown that lies beyond those frontiers. Further,

it is reasonable to suggest that students can be guided to the frontiers only by teachers who are themselves familiar with the territory. And when an active mind of teacher or student has some experience with the outposts of knowledge, there may be generated an irresistible desire to penetrate the boundaries still further. Thus scholarly inquiry--which may be considered as synonymous with research--is an essential part of higher education. Far from believing that research is a competitor or an enemy of higher education (of teaching, if you will), I insist that they are inseparable and that each is essential and complementary to the other.¹²

Because the citizens of the State of Illinois and of the nation have expressed readiness to come to grips with the problems of the city, problems of racial tension, problems of health and educational services, problems of personal and international distrust, the University will place new emphasis on caring for the dignity and the well-being of the individual, preserving the democratic process, and expanding opportunities for self-fulfillment.

Examples of areas in which this campus has exhibited particular strength and considerable faculty and student concern are:

- Accomplishing world peace
- Continuing education
- Crime prevention
- Cultural development and appreciation
- Disarmament
- Education of minorities
- Ethnic programs
- Family relationships
- Food production and research
- Governmental institutions
- Information storage and retrieval
- Low-cost housing
- Population explosion
- Poverty
- Quality of physical and natural environment
- Quality of work experience
- Racial discrimination
- Student activism
- Transportation
- Urban renewal

The extent to which this campus can rapidly and successfully involve the entire educational process in the search for knowledge relating man-to-man and man-to-environment depends on public support of the endeavor. Increased state funding of graduate education and research at the Urbana-Champaign campus must be provided, since federal research funds have proved to be no panacea for all our problems. Federal support has perhaps created as many problems as it has helped to solve, and it does not include all fields of learning. But without federal funding, which now amounts to 30 percent of the total annual operating expenditures of the Urbana-Champaign campus, the strength of higher education at this institution would be seriously impaired. Our ability to attract increased and new federal support depends a great deal on the willingness of this state to provide matching funds.

A mutual accountability of faculty to students and students to faculty must exist if the educational process is to be meaningful and nourished in trust and respect. Governance is not the issue that splits a university community, but it is symptomatic of the real issue--accountability to one another and to society. Students have the right to expect that faculty and administrators be attuned to their expectations and aspirations. But students also have the responsibility to express these expectations constructively.

Our teaching must develop a student's objectivity, must cultivate his intellect, and must affect the student with great ideas. Students must know that they are being prepared for useful careers of leadership. Each faculty member shares the responsibility for continually updating his course material and for presenting it in a manner conducive to creative thought. The purpose of each course should be explicitly described, and the relationship of each course to the development of the student as a "whole man"

should be clearly understood. The presentation of ideas in one course should complement what is being presented to the student in all other courses.

The faculty is charged with creating in the learning environment and in the student an attitude that seeks ways to use unprecedented knowledge to cope with unprecedented conditions. All that is taught must be taught with a view to the better understanding of human behavior and organization. The students demand and require such understanding if they are to solve society's problems. They must also be instilled with the desire to increase knowledge, classify it, criticize it, apply it, and thus provoke the disclosure of practical solutions to our problems.

The Urbana-Champaign campus must remedy the deficiencies of the current faculty reward system to nurture the healthy learning environment to which we aspire. Most of those members who have joined the faculty over the last decade or so are predisposed to place "frontier" basic research at the top of priorities, largely because the fruits of success are so great. If the campus is to promote problem-oriented research and relevant instruction, if service to society is to become a driving force on our campus, and if these changes are to be achieved without strife, we need outstanding teachers and we also need to reward and motivate them as well as we have rewarded outstanding work in research in the past.

The Urbana-Champaign campus must learn how to contribute to the formulation of public policy. The ivory tower must also be a watch tower. We must be flexible but prepared to thwart such threats as mass destruction, overpopulation, pollution of air and water, the depletion of resources, and so forth. Our most significant contribution to the formulation of public

policy will be through our graduates whom we shall prepare to accept leadership in their fields. We should, however, also endeavor to provide information and voluntary expertise to those local, state, and federal officers who make decisions concerning public policy.

There are of course dangers inherent in such a proposal, especially to academic freedom, which must be maintained. A public educational institution offering its services in the formulation of public policy not only deals with a delicate and complex problem but also places itself at the interface between government and society, a position in which friction and change are constant. The delivery of the University's contribution of impersonal faculty attitudes and opinions for the betterment of public policy formulation will be part of the function of the senior-level office to be created for the coordination of public service responsibilities, and must be accomplished in such a way as to protect the University from political abuse, infringement of academic freedom, and partisan infighting.

Graduate and Professional Education

The explosive expansion of knowledge in all professions calls for broadly based, intellectually adaptable men and women. Graduate students today must be prepared eventually to apply all their University training and scholarship to their profession. In the course of his graduate work, the doctoral student is transformed from learner to leader. The doctoral student represents the most substantial investment of intellectual and material resources made by the Urbana-Champaign campus.

The speed and scale of social change expected during the 1970s will impose many demands on our graduate programs for which funding will not be adequate unless we take immediate action. The expectations and aspira-

tions of society, as mirrored in our graduate students, could very likely exceed our ability to revise existing programs and develop new ones unless the Urbana-Champaign campus undertakes a thorough scrutiny of departmental traditions and convictions concerning the nature of graduate education.

High rates of attrition and excessive time stipulations for earning advanced degrees in certain areas will be no longer tenable in the 70s. As a first step to remedy this situation, all departments should develop selection procedures which will ensure that only those students of the highest quality and with the most promise be accepted for graduate work. The same time, effort, and attention must be applied to the selection of graduate students as is applied to the selection of faculty and staff. Better screening methods will cause necessary attrition to occur early in a student's program. A student's performance in his first year should be evaluated more precisely and accurately. A better advisory system with more personal contact between student and adviser should lead to the discovery of misfits early enough in their graduate career so as to save their time as well as the department's resources. The departmental advisers should help each student choose the most efficient program for his needs and objectives. Unnecessary material should be eliminated. Language requirements should be dropped where they no longer effectively support the student's professional performance. Where possible, the master's thesis should be eliminated for Ph.D. candidates. Master's degree programs should be designed with a minimal time requirement.

New programs for post-master, professional degrees should be designed to meet the needs of bright, qualified students desiring a

practice-oriented doctorate rather than a research-oriented Ph.D. degree. These should be high quality programs to prepare the graduates for continuing lifetime service; they may be an important factor in determining the availability and distribution of the state's professional, educational, technical, and managerial manpower in the 1970s.

The practice-oriented programs should not only appraise specialty knowledge, examine it critically, and extend it but should also relate it to general knowledge, thus providing the student with conceptual as well as special tools to apply his education. These programs should also place emphasis on social aspects of the particular profession in which the degree is being taken and should draw on courses of instruction from the life sciences, physical sciences, social sciences, humanities, mathematics, and the arts.

Admission standards and recruitment must be consistent with the objective of developing human resources for the application of knowledge. Recruiting should be designed to attract a variety of students from all socioeconomic backgrounds, and recruitment among minority and deprived groups should be especially emphasized.

The Urbana-Champaign campus has the following professional doctorate programs:

- Doctor of Business Administration
- Doctor of Education
- Doctor of Library Science
- Doctor of Musical Arts
- Doctor of Psychology
- Doctor of Social Work

There is a need for the doctorate in more disciplines at Urbana-Champaign. At present, planning for the development of Doctor of Arts degrees in Economics and in Biological Science is in advanced stages at the Department

of Economics and the School of Life Sciences. The thrust of this planning is primarily to train teachers for junior colleges and four-year colleges. A program in Medical Education on the Urbana-Champaign campus is proceeding rapidly to help meet the state's demand for professionals in medicine. A basic medical science curriculum, involving the disciplines of biochemistry, microbiology, and physiology, is being developed and will initiate a complete program in Medical Education for (a) the preprofessional student by 1974 and (b) the professional by the early 1980s.

By stabilizing the undergraduate enrollment, the Urbana-Champaign campus is consequently stabilizing the number of teaching assistantships available to graduate students. Direct financial aid to graduate students must, therefore, be increasingly provided through fellowships and research assistantships, thus making it possible for students to do course work and thesis work on a full-time basis. It must be recognized that if the time it takes a graduate student to get an advanced degree is to be significantly reduced, the most effective means of accomplishing this is to provide him with a means of livelihood that permits him to give full time to his Ph.D. requirements. Such financial aid will "kill two birds with one stone," in that it will produce new knowledge and highly educated manpower in a most efficient and inexpensive way.

It is not proposed that all direct financial aid to graduate students be provided through state funding. The great majority of graduate stipends at Urbana-Champaign, as in the nation, is now provided through federal grants and contracts. However, our ability to attract increased federal funding of the graduate program at Urbana-Champaign, and indeed in the state system as a whole, is greatly dependent on the state's investment in that program. The Urbana-Champaign campus's ability to attract federal funding of our

educational program has been very successful primarily because of the state funding which we have been able to invest in programs coincident with national goals and priorities.

The effectiveness with which the University of Illinois has successfully supported its educational program by prudent expenditure of state and federal dollars and our capability to attract federal support in the future if generous state support is provided is attested to by the evaluation of the University in the "Miller Bill"--the formula for distribution of institutional grants. (See Table 1.) This formula, considered by the Congress in assigning funds for the support of higher education in the leading educational institutions of our country, places the University of Illinois near the top of a list of major institutions. Part 1 of the three-part formula allocates funds on the basis of academic science awards received by the faculty or the institution the previous year. In this category, the University of Illinois ranked third. Part 2 of the formula is based on undergraduate enrollment as a percentage of national enrollment. In this category, the University of Illinois again ranked third. Part 3 of the formula is based on the number of advanced degrees awarded, and in this category the University of Illinois stood second.

Interdisciplinary and Multidisciplinary Centers

The innovation that appears to be the most significant future trend in graduate education is more interdisciplinary and multidisciplinary research programs and centers than ever before. Although the conventional departmental structure provides a strong base on which higher education is constructed, there is an increasing need to provide an opportunity for scholars to assemble around a common interest that may include several

TABLE 1

DISTRIBUTION OF NATIONAL INSTITUTIONAL GRANTS TO SELECTED
INSTITUTIONS BY EMPLOYING A PROPOSED NSF FORMULA

Top 20 in Federal Funds for Academic Science FY 67

(\$ in 000's)

	<u>Part 1</u>	<u>Part 2</u>	<u>Part 3</u>	<u>Total IG</u>
Mass. Institute of Technology ¹ (95,487)	\$977	\$155	\$3,536	\$4,668
University of Michigan (56,344)	782	690	3,296	4,768
University of Illinois* (52,446)	762	896	4,096	5,754
Columbia University (52,113)	761	349	1,780	2,890
University of California, Berkeley (48,889)	744	577	4,225	5,546
Harvard University (48,861)	744	293	2,177	3,214
University of Wisconsin, Madison (48,290)	742	407	3,375	4,524
Stanford University (45,856)	729	231	3,023	3,984
University of California, Los Angeles (45,398)	727	581	2,351	3,660
University of Minnesota* (42,125)	711	922	2,266	3,898
University of Chicago (39,583)	698	195	1,560	2,453
New York University (39,363)	697	673	2,636	4,006
University of Washington (38,731)	694	600	1,686	2,979
Cornell University (37,741)	689	389	2,108	3,185
John Hopkins University (34,968)	675	205	790	1,670
University of Pennsylvania (33,770)	663	388	1,589	2,640
Yale University (30,926)	634	173	1,434	2,241
Duke University (27,594)	601	151	736	1,488
University of Maryland* (27,138)	596	906	717	2,219
University of Colorado (24,412)	569	523	1,135	2,227
				<u>68,014</u>

¹Figures in parentheses represent the base dollars (in thousands) for Part 1 of the formula. It is the total Federal Funds for Academic Science obligated to the institution in FY 1967.

*All campuses.

disciplines. And there is no denying that contemporary societal problems demand multidiscipline cooperation.

The report of the Special Commission on the Social Sciences of the National Science Foundation has proposed an initial ten million dollar program to establish a series of "social problem research institutes," possibly on university campuses. The 1970 budget request of the NSF includes a proposal for another ten million dollars in support of "interdisciplinary research relevant to problems of our society" in the nation's universities. There is some question, however, as to whether or not these undertakings should be conducted on or off university campuses, but it is definite that at least some of them will be on campus. Certainly we should be prepared for interdisciplinary undertakings that are far more imposing and complex than anything we are so far acquainted with. There will be profound implications for budgeting, conventional notions of departmental roles, and traditional administrative alignments. The course of such developments is difficult to predict in detail, but some general observations may be made.

At Urbana-Champaign the word "center" is not normally used to denote an independent department or faculty; it refers rather to an administrative device for assembling scholars from different disciplines and departments around a shared interest. (A center may be labeled a "laboratory," an "institute," an "office," or even "studies.") Centers are means of facilitating interdisciplinary assaults on complex investigations. The first such center at the University of Illinois was the Digital Computer Laboratory established in 1948 on the Urbana-Champaign campus.

The investigation or mission may be very specific or quite broad, and it may or may not require extensive physical facilities. Furthermore, the organization of a center ranges from those centers with their own interdisciplinary professional staff engaged in little or no teaching to those administering educational or graduate research programs that include faculty and staff from a variety of departments.

The diversity of such activities is suggested by the following partial list of centers on the Urbana-Champaign campus:

<u>With independent physical facilities</u>	<u>Without major independent physical facilities</u>
Atmospheric Science Laboratory	Asian Studies
Children's Research Center	Center for Advanced Study
Coordinated Science Laboratory	Comparative Psycholinguistics
Department of Computer Science	Curriculum Laboratory
Materials Research Laboratory	Human Ecology
Radiocarbon Laboratory	Institute of Communications Research
Speech and Hearing Clinic	International Comparative Studies
Survey Research Laboratory	Latin-American Studies
	Russian and East European Studies
	Water Resources Center

The distinction between an "interdisciplinary center and a "multidisciplinary" center or facility is important. Although these terms are often used interchangeably, it is better to distinguish between them. In the "interdisciplinary" center, groups or teams of people are assembled from different departments to seek solutions to problems that call for the insights of experts in a number of disciplines. It is the problem that determines who is to be involved. At the Coordinated Science Laboratory, for example, engineers and scientists with different fields of specialization have been involved in the design of components for a ship's navigation system, an air traffic control system, and a computer-based education system. In each case

a set of special disciplinary backgrounds or skills was needed, but the needs varied for the different problems.

A "multidisciplinary" center is one in which individual scholars from different disciplines and departments may share common research approaches, either experimental or theoretical. Thus a metallurgist, a solid-state physicist, and a solid-state chemist may benefit by sharing both the experimental facilities and the intellectual environment of a laboratory like the Materials Research Laboratory.

Thus, the roles as well as the make-up of the two types of centers are quite different. In the interdisciplinary center, it often cannot be anticipated which departments may become involved. For example, in a recent Coordinated Laboratory Science project a physicist and an urban planner joined in a program which originated as a transportation problem. By contrast, in a multidisciplinary center, the participants may operate on the basis of serving a set of previously specified clients.

As we plan for the 70's, we are persuaded that the need for training applied researchers will be relatively far greater than in the past, and that the nature of their training will of necessity be problem-oriented. As we look toward more widespread interdisciplinary and multidisciplinary studies of the major problems of society, we must carefully consider their relationship to the graduate programs of the departments, for centers should be established only when a dedicated group of faculty members express a desire for such a center and can show that its creation will permit some objective to be accomplished which cannot be accomplished under the departmental system. One of the principal objectives of integrating graduate student programs with center programs is to educate and produce young leaders to help solve the problems the centers are attempting to solve. The centers cannot stand apart

from the departments, for these programs present a valid means of involving students in research on major issues of current importance.

Postdoctoral Study

The explosive growth of scientific knowledge has led to an ever-increasing specialization on the part of the individual scientist. As a result, it is difficult for a new Ph.D. to have more than a narrow view of a small part of his field of interest. The new Ph.D. in the sciences today has less of an overall view of his field, and is consequently less qualified to begin an academic career in teaching and research than was his counterpart twenty-five years ago. Postdoctoral study is, therefore, almost essential for the scientist headed for an academic career. If possibilities for postdoctoral study did not exist, additional years of pre-doctoral training would very likely be required of our present group of candidates for the Ph.D.

The development and growth of postdoctoral study have occurred because governmental support of scientific research in the universities has made it possible for university departments to offer research positions, in effect postdoctoral training, to new Ph.D.s at salaries comparable to those paid men beginning their teaching careers. The use of federal funds for the support of postdoctoral scholars has commanded a very high priority with the directors of research projects, even when such funds are limited. While the allotment of funds to research associates may be attributed in part to the educational and intellectual value of the postdoctoral training they thus receive, the intensification of the research effort made possible by the participation of highly intelligent, well-trained research associates is also of major importance.

The academic climate is such, then, that today's Ph.D. not only feels

the need for postdoctoral study, but also finds that funds for such study are usually available to him. As a result, in the natural sciences (and in some of the social sciences), most new Ph.D.s who are interested in a career with a major emphasis on research are now able to spend up to three years in postdoctoral study--in general at a university different from the one at which they obtained their degree. Postdoctoral associates are often in demand for the important supporting or initiating role that they play in the large, group-research programs carried on in major universities.

In the sciences, the availability of postdoctoral fellowships means that there no longer exists a sharp cutoff between the end of a man's formal education (the Ph.D.) and the beginning of his professional career. This pattern may be regarded as part of the increasing emphasis on education, particularly graduate education, in this country. The change is reflected in the fact that in many science departments today there are more postdoctoral fellows than there were graduate students twenty-five years ago.

The formal duties of postdoctoral associates and fellows involve the furthering of research which is usually connected with the work of an individual professor or a group of students. Informal duties involve occasional lecturing, direction of seminars and, most important, day-to-day contact with graduate students that is so vital in the training of both graduate students and postdoctoral fellows and associates. Financial support is provided by government grant, contract, or fellowship. Space requirements include university office, laboratory, studio, and library facilities. Faculty supervision varies but is usually less than that required by graduate students. The postdoctoral associate or fellow, in fact, supervises the graduate students in a peer-group situation that complements faculty supervision.

At Urbana-Champaign, each department is primarily responsible for maintaining the desired number of postdoctoral personnel that seems to be required by it for an effective balanced, and productive research team. Problems of financing, supervising, and space assignment are also handled by each department.

The postdoctoral fellows and associates make four distinct contributions to the University:

1. Expansion and intensification of research: Postdoctoral personnel are indispensable to the present research effort in the natural sciences and, to a lesser extent, the social sciences. Because they are more experienced than the average graduate student and because they are chosen from among the best of the new Ph.D.s, they are frequently intellectually superior to the great majority of the graduate students and are able to contribute to and maintain research of high quality.
2. Enhancement of the teaching function: Postdoctoral associates help train graduate students in research and are thereby further trained themselves. Without the assistance of postdoctoral associates, it would not be possible to train the number of graduate students presently engaged in research. Postdoctoral fellows and associates attend, and sometimes direct, seminars.
3. Creation of a reservoir of talent: Postdoctoral associates represent a reservoir of talent from which the University may recruit permanent faculty and staff.
4. Contribution to the Role of the University as an intellectual center: Because they are a selected and vigorous group of bright young men, postdoctoral fellows and associates serve as a stimulus for both

the graduate students and the faculty and they raise the level of distinction of the University by calling attention to its resources. One of the significant new indexes of the excellence of a university and its faculty today is the number of postdoctoral personnel it attracts.

It is suggested that postdoctoral appointments offer an excellent means to initiate new graduate research programs at developing institutions by bringing faculty members from other institutions of higher education in the state system to the Urbana-Champaign campus. The postdoctoral associate or fellow is here to stay, and every attempt should be made to include him in our future enrollments, facilities, and budgets.

Maintaining and Strengthening the Quality of Education

The students and their education, their individual development and maturation, is one of the principal concerns of the Urbana-Champaign campus and the main justification of our investment and our effort. The quality of daily life is likely to become of primary importance during the next decade. People are demanding increasingly that their efforts not be entirely future-directed, but that they derive satisfaction from presumably preparatory activities. People are searching for the qualities in their existence that are unique; they seek opportunities for personal gratification and rewarding human contacts. And the most ardent searchers are the youth.

The students of the future, like those of today, will want to feel that they are making a direct contribution to the alleviation of pressing social problems, even while at the university. It is difficult to foresee a day when the problems of society will be so benign as to reestablish a view of university education wherein the student accepts the fact that his time working toward the degree is solely preparation for some future constructive effort.

The quality of the educational process and the quality of environment in which knowledge is transferred must receive primary attention. In dealing with students, the faculty and administration of the Urbana Campus must not sacrifice intimacy to remoteness, sensitivity to the superficial, individualistic recognition to production. The pluralism of interests and motivations within our student body can be preserved on this large campus if there is continual successful development of sub-communities within the larger units on campus.

Student contributions to the educational programs are extremely valuable at the department level where the framework of education is determined and where the student, in effect, "has a home." Since the department is the nucleus in the university structure, as well as the place in which dialogues between students and faculty can occur, the department of the Urbana-Champaign campus should give every consideration to the following postulates in future planning:

It is a departmental responsibility to exemplify and encourage excellence in teaching at all levels of instruction; and student participation in annual systematic departmental evaluation is to be encouraged.

In consideration of the social responsibility which we believe should be instilled in all our students, departments should establish courses of a work-study nature related to urban, economic, political, and social problems. These courses should be designed as a relevant part of a student's education and should be offered for credit as required or elective courses.

As progress is made toward a certain degree of emphasis on studies of problem areas, ties between undergraduate and graduate studies should be strengthened. Wherever possible, departments should experiment with tutorial instruction at the undergraduate level. Outstanding senior faculty members who have earned a reputation in high-quality graduate education must be encouraged to teach a course at the undergraduate level on a recurring basis. Improving student facilities and University services to students will also enhance the quality of graduate and undergraduate education at the Urbana-Champaign campus.

Recognizing the problems associated with mass education at a large university, departments should make every possible attempt to dispell the impersonal atmosphere, the sense of remoteness and isolation that prevents meaningful personal relationships between faculty and students. Frequent student counseling and advising should provide the necessary avenue for personal access to the faculty by the students. Departmental academic planning should include reevaluation of course prerequisites to maximize flexibility and increase freedom of choice in the design of a student's college career.

The Urbana-Champaign campus shall become a laboratory for testing new approaches to education, new curricula, and new courses. Ways must be found (1) to emphasize and stimulate in a student the achievement that matches his ability; (2) to bridge the gap in age and experience between teacher and student; (3) to recruit, admit, and serve qualified students from low-income and disadvantaged environments; (4) to provide a grounding in science to the

nonscientist; and (5) to instill in the scientist an interest in the humanities and the arts.

The quality of the educational process, however, depends primarily on the men who provide the motivation for learning and not on the programs which structure the material to be learned. The faculty must continue to pursue innovative methods of teaching, must at all times compel the minds and tax the abilities of the students they teach and counsel, and must instill in the students enough independence to test their own attitudes and ideas. While the faculty must provide the student with an educational environment conducive to learning and experimentation, the faculty must be allowed the time to pursue their teaching activities with relative freedom from the myriad tasks that currently drain their energies. If the relationship of faculty to student is to be improved, as it must be, then the current ratio of faculty to students and of supporting staff to faculty will have to be increased.

A point which is frequently misunderstood outside of academic circles is that a twelve-credit-hour classroom and laboratory schedule (or even a nine-credit hour) can easily mean a very long work week for a faculty member. Unfortunately, far too little attention has been given to the measurement of faculty load. Although data exists currently, it is either scarce or inadequate. The Urbana-Champaign campus should undertake to systematically maximize the time available to a faculty member for teaching, class preparation, research, student advising, public service, and personal development.

The University of Illinois at Urbana-Champaign was rated "Distinguished" in Biological Sciences, Physical Sciences, and Engineering¹³ in the 1966 American Council on Education (ACE) report, An Assessment of Quality in Graduate Education. According to the same report, the national ratings of

Urbana-Champaign departments in the humanities and the social sciences were noticeably weaker:

Department	Quality of Graduate Faculty ¹	Effectiveness of Graduate Program ²
Humanities		
Classics	Good	Acceptable Plus
English	Strong	Attractive
French	Strong	Acceptable Plus
German	Strong	Attractive
Philosophy	Good	Acceptable Plus
Spanish	Strong	Attractive
Social Sciences		
Economics	Good	Acceptable Plus
Geography	Good	Acceptable Plus
History	Strong	Attractive
Political Science	Strong	Acceptable Plus
Psychology	Distinguished	Extremely Attractive
Sociology	Good	Acceptable Plus

¹Quality of Graduate Faculty was rated on the following scale:
Distinguished, Strong, Good, Adequate Plus.

²Effectiveness of Graduate Program was rated on the following scale:
Extremely Attractive, Attractive, Acceptable Plus.

During the years since the ACE report was released, the science and engineering departments of the University have maintained their high-quality graduate and undergraduate education, but the humanities and social sciences have not shown noticeable improvement; in fact, several departments have declined in prestige and in teaching effectiveness.

During the next ten years, the physical and biological sciences and engineering must continue to receive the support necessary to sustain their distinguished ranking, to improve selected departments, to maintain their strong research programs, and to develop interdisciplinary studies as needed.

Special action must be taken, however, to strengthen and improve humanities and social science departments. Although the Urbana-Champaign campus has made positive strides since the 1945 Report of the Committee on Future Programs, much still needs to be done. In general, these departments have the strengths from which to build because (1) the library is one of the foremost in the United States; (2) the computer services are excellent; (3) there is a nucleus of well-qualified senior and junior faculty in most departments; and (4) there is an adequate (in some cases, excessive) number of undergraduate and graduate students.

The humanities and social sciences have a heavy service teaching load at the undergraduate level. This drains the energies of the staff of these departments and prohibits the development of graduate research programs consistent with the high standards apparent on the campus as a whole. Departments in the humanities have received almost no federal support; the social sciences, however, have recently begun to receive some such funding. Many of the humanities and social science disciplines have emphasized research that in most cases takes a long time to complete--book-length studies are more common in the humanities than are articles or papers, which report research in the sciences. As a result, promotion and tenure come slowly, creating tension among the junior faculty in the humanities and social sciences.

To improve the social sciences and humanities departments, the following steps should be considered:

1. Restructuring of the College of Liberal Arts and Sciences. The least disruptive means of reorganization would be to promote the development of "schools" within the framework of the existing structure.

2. Reducing the size of some of the departments in the social sciences and humanities to make them more effective. More administrators (vice chairmen, directors of graduate studies, teacher training, and so forth) and more clerical help are needed. In some cases, ways must be found to detach certain divisions of departments; for example, the English Department plans to separate itself from rhetoric, business English, and English as a second language.
3. Restricting undergraduate enrollments to keep student-faculty ratios reasonable. The faculty should not be increased solely to alleviate the burden of heavy undergraduate teaching loads.
4. Recruiting distinguished senior and promising junior scholars. Vacancies should be anticipated and recruiting done in advance. Departments from within these disciplines as well as departments from other disciplines and centers for interdisciplinary studies should be encouraged to cooperate in the simultaneous recruiting of distinguished faculty members.
5. Improving of departmental physical facilities. Some departments now have or soon will have adequate facilities, but most of the departments are located at the heart of the campus in the old, less adaptable buildings.
6. Establishing a Humanities Center and a Social Science Center. The Yale Center for Humanistic Studies might well be used as a model. The function of the centers would be to provide (1) facilities for advanced research at the graduate level; (2) a broader context in which graduate education can occur; and (3) a physical location for activities that cannot easily be accommodated in the departments.

Among these activities would be the study of certain interdisciplinary and problem-oriented topics, a concern for the creative as opposed to the academic side of the humanities and social sciences, and a responsiveness to educational innovation, particularly that suggested by students.

7. Continuous panel review and assessment of the effectiveness of graduate and undergraduate programs. Faculty retention and promotion policies should be reviewed, and departments should be encouraged to reward good teaching and to increase the value of significant research.
8. Attracting the best-qualified graduate students. Systematic efforts should be made to encourage enrollment of students from underprivileged backgrounds, to increase financial support of graduate students, to reduce teaching loads of teaching assistants, and to decrease the time needed to complete the doctorate.

Beyond 1980

Planning for the growth of the University over the next ten to fifteen years without explicit examination of possible and probably societal changes during that period of time seems both unwise and unproductive. Without appropriate attention to social change, we find that problems seem to creep up on us unnoticed and that priorities tend to be established primarily on grounds of economy, of efficiency, of expediency, or for maximum short-term benefit. And there is a strong temptation to plan for the future primarily on the basis of trends of the recent past.

We want to be a people's university, and we have options in planning for that in the coming decades. We can expand our objectives on the basis

of priorities established within state or federal agencies. We can establish priorities that reflect a strong university role in alleviation of social problems. We can strive to design our campus community first and foremost to make personal and immediate satisfaction of the students and the staff more realistic. We can accent the elitism that began to surge at many state-supported universities in the early 1960's. We can permit the campus to grow exclusively as the result of the interplay of existing campus forces. There are many possibilities and combinations of possibilities, for we are inventing our future by the choices we make now.

What kinds of trained personnel are likely to be needed in an increasingly specialized, technological, and bureaucratic society? Will corporate and governmental structures continue to expand? What are the implications of these developments for higher education? What questions of personal and societal value are likely to emerge in the next decade or two? What choices will individuals face in tailoring their desires and goals to their immediate environments? What skills will they require to exercise these choices wisely? Such questions and many more will have to be faced by long-range planners in education.

In recent years a scholarly literature has begun to develop in the area of "futurism," haphazard methods of planning have been deemed unnecessarily risky, and people in all fields are projecting alternative futures as a way of sharpening their examination of today's public policy questions. The emphasis is not on predicting or prophesying the future; it is rather on outlining a variety of clear possibilities. The delineation of alternatives is new and it is based on the discovery, as well as the assumption, that many futures are possible. Some of the new methodologies and techniques

being developed in the study of the future are being used in business and in government and seem applicable to educational planning.

To assure continuing study of the congruence between developmental efforts to give more relevance to education on the Urbana-Champaign campus and the nature of our evolving society, it seems important to encourage interested faculty members and administrative staff to develop systematic studies of futures. A worthwhile contribution to the designing of our campus for 1980 and beyond might be the establishment of an organizational unit on futurism that would be central to our campus planning activities, that might gather and house scholarly material on the subject, and that might encourage faculty and students and administrators and staff to exchange views and to develop collaborative studies. Such a unit could include representatives from all segments of the statewide system of higher education.

On 12 July 1969, President Nixon established a National Goals Research Staff within the White House. If the setting is seen as the University rather than the Executive Branch of the federal government, some of the functions he outlined might serve as an appropriate charge to a group concerned with future plans for the Urbana-Champaign campus:

- ...forecasting future developments, and assessing the longer-range consequences of present social trends.
- ...measuring the probable future impact of alternative courses of action, including measuring the degree to which change in one area would be likely to affect another.
- ...estimating the actual range of social choice--that is, what alternative sets of goals might be attainable, in light of the availability of resources and possible rates of progress.
- ...developing and monitoring social indicators that can reflect the present and future quality of American life, and the direction and rate of its change.

Above all in our long-range planning, the Urbana-Champaign campus must

avoid such rigid, highly detailed specifications for the future that the plans themselves stand in the way of change and progress. The case has been argued, and perhaps even proved, that in an increasingly bureaucratized society, the organizational units most poorly prepared for the future are those most highly specialized. A potential danger is to generate plans for our campus that are so elaborately detailed that they exclude or fail to take into account the apocalyptical or revelatory quality of societal change, and it is only those organizational structures that are loose enough to adapt to that quality that can ensure progress.

III. QUANTIFICATION OF LONG-RANGE PLAN

National Trends

A great wave of students will descend on institutions of higher education during the 1970's. The trends indicate that an ever-increasing proportion of the American public will demand and complete an education beyond the 12th grade. The Bureau of Labor Statistics indicates a continual educational upgrading of the labor force and that the percentage of college-educated personnel in all sectors of the labor force will continue to increase during this decade. Figure 1 demonstrates the change that has occurred in the educational attainment of the American public since 1947.

The trend in higher educational attainment among the age groups from 20-24 and from 25-29 years of age is most significant. The number of 20-24-year-olds who have attended one year (or more) of college has increased from 12.4 percent in 1947 to 33.2 percent in 1967. The number of 25-29-year-olds who have attended four years (or more) of college has increased from 5.5 percent in 1947 to 14.6 percent in 1967. The study, National Norms for Entering College Freshmen, has sampled freshmen entering all institutions of higher learning for the past four years and indicates that more than one-half of all freshmen --including more than one-quarter of those entering junior colleges--intended to go to graduate college on completion of their undergraduate careers.

State Trends

The implication of these trends can be quantified for the State of Illinois. Table 2 has been compiled from the report, Higher Education Enrollment in Illinois--1960 to 2000. It demonstrates a projected growth of some 26 percent in the Illinois college-age population for the next decade.

FIGURE 1

CUMULATIVE DISTRIBUTION BY YEARS OF SCHOOL COMPLETED
FOR PERSONS 20 YEARS OLD AND OVER, FOR THE UNITED
STATES: 1947 TO 1967

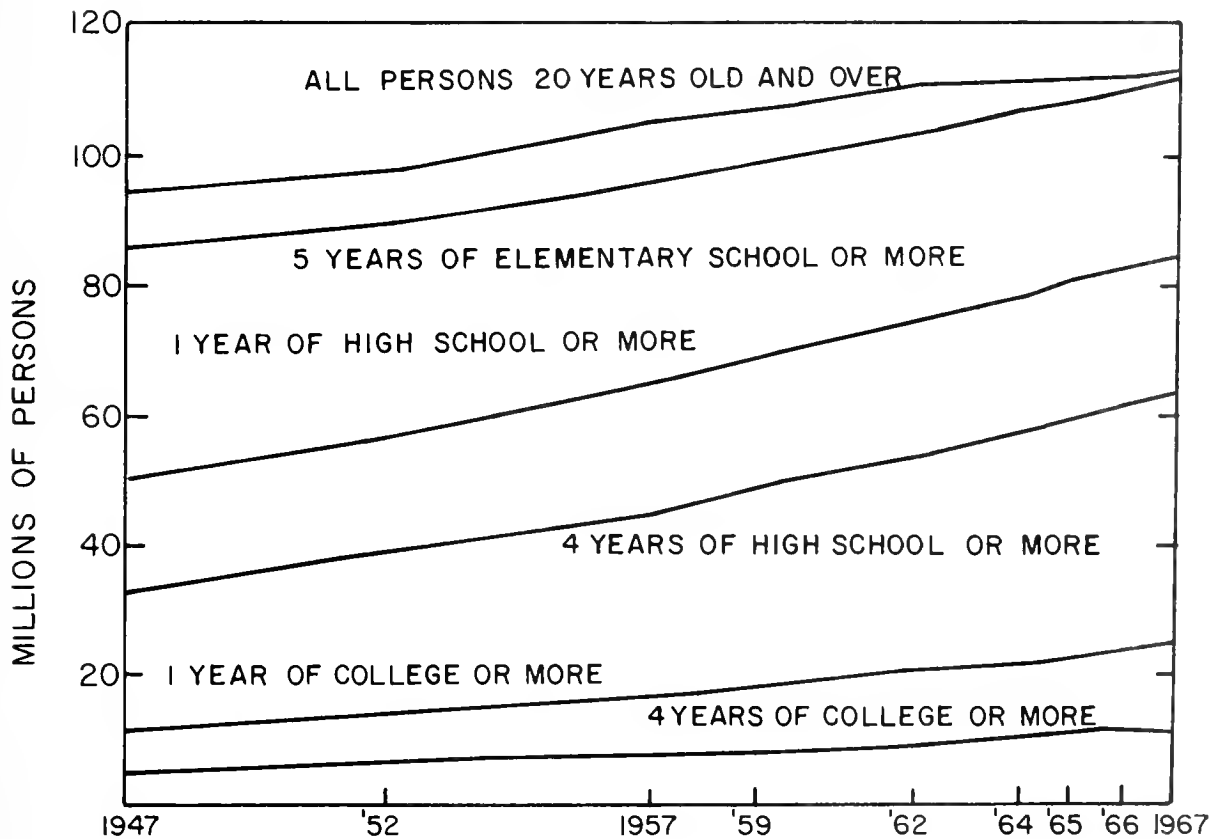


TABLE 2

COMPARISON OF GROWTH IN COLLEGE-AGE POPULATION
AND ON-CAMPUS ENROLLMENTS FOR ILLINOIS

Year	College-age Population ^a		Enrollment Rate ^b	On-campus Enrollment	
	Number (x 1000)	Index b '69		Number (x 1000)	Index b '69
1960	480	70	41.69	200.1	49
1961	512	74	42.35	216.8	53
1962	533	77	43.43	231.5	57
1963	547	79	44.60	244.0	60
1964	550	80	48.66	267.6	65
1965	584	85	50.48	294.8	72
1966	622	90	50.54	314.4	77
1967	660	96	52.04	343.5	84
1968	696	101	54.38	378.5	92
1969	689	100	59.44	409.6	100
1970	701	102	64.44	451.7	110
1971	720	104	66.24	476.9	116
1972	747	108	67.50	504.2	123
1973	772	112	68.00	524.9	128
1974	796	116	68.50	545.3	133
1975	816	118	68.55	559.4	137
1976	831	121	68.55	569.7	139
1977	844	122	70.35	593.8	145
1978	853	124	72.15	615.4	150
1979	865	126	73.95	639.7	156
1980	870	126	75.75	659.0	161
1981	868	126	76.75	666.2	163
1982	863	125	77.25	666.7	163
1983	840	122	77.50	651.0	159
1984	814	118	77.75	632.9	155
1985	781	113	78.00	609.2	149
1990	730	106	79.10	577.4	141
1995	802	116	79.60	638.4	156
2000	907	132	80.00	725.6	177

^aThe total number of all youths of 18, 19, 20, and 21 years of age.

^bThe total number of students, of any age, enrolled per 100 of the college-age population.

However, because of an increasing enrollment rate during this same period, the on-campus enrollment is expected to expand by about 60 percent by 1980. The increasing enrollment rate reflects (1) the increasing number of high school graduates seeking education beyond high school; and (2) the increasing number of college graduates seeking advanced degrees, thereby extending the period during which they are enrolled in institutions of higher education.

Although both the college-age population and the on-campus enrollment for the State of Illinois are expected to drop during the 1980s, the enrollment rate for the state will have risen to such a level that on-campus enrollments are not expected to decrease as drastically as the college-age population. As has been previously stated, the enrollment rate projected for the State of Illinois exceeds the national rate; however it is somewhat conservative when compared to enrollment rates projected for similar populous, industrialized states with well-developed systems of higher education. Such factors as increasing per capita income, higher levels of parental education, growing aspirations of youth, increasingly sophisticated manpower demands, and rising professional standards all influence the projected enrollment rate.

During the 1970's the growth of the Urbana-Champaign campus and its academic programs must necessarily be selective when one considers the broad demands that will be placed on the state's system of higher education. In considering what the role of the campus as the pacemaker institution in the state shall be, certain recent changes in the state system of higher education must be examined.

A comparison of enrollments in all public and private educational institutions (Table 3) reveals that the public sector has encompassed the great majority of recent enrollments. This is especially true at the undergraduate level, but Table 3 indicates that an increasing proportion of the students at the graduate level can be expected to enroll in public institutions. This

TABLE 3

ON-CAMPUS ENROLLMENTS (ALL ENROLLMENTS X 1000)
A COMPARISON OF PUBLIC AND PRIVATE INSTITUTIONS

Year	Total Headcount, All Levels			Graduate and Professional			Undergraduate ^a					
	Public	Private	Total	Public % of Total	Public	Private	Total	Public % of Total	Public	Private	Total	Public % of Total
1965	168.7	126.1	294.8	57	20.8	25.3	46.1	45	147.9	100.7	248.6	59
1966	182.6	131.8	314.4	58	23.5	27.7	51.2	46	159.1	104.0	263.1	60
1967	208.9	134.6	343.5	61	25.6	28.5	54.1	47	183.4	106.0	289.4	63
1968	244.0	134.5	378.5	64	28.5	29.2	57.7	49	215.6	105.2	320.8	67
1969	275.4	134.2	409.6	67	30.6	29.7	60.3	51	244.8	104.5	349.3	70

^aSpecial students included in undergraduate enrollments.

is especially so as the rate increases among those with baccalaureates from the public sector who go on for advanced degrees.

Public senior institutions have enrolled a steadily decreasing proportion of students at the freshman-sophomore level. This is a part of the State of Illinois Master Plan, as the junior college system develops, to assure democratization of educational opportunities to Illinois citizens. Table 4 demonstrates the decreasing fraction of the enrollments accommodated by the public senior institutions at the freshman-sophomore level during the past five years.

TABLE 4

ENROLLMENT OF FRESHMEN-SOPHOMORES (ALL ENROLLMENTS X 1000)
COMPARISON OF PUBLIC SENIOR INSTITUTIONS^a AND JUNIOR COLLEGES

Year	Total Headcount Freshmen-Sophomores	Senior Institutions	Junior Colleges	Senior Institutions as % of Total
1965	111.9	55.2	56.7	49
1966	119.7	59.5	60.2	49
1967	133.9	61.1	72.8	46
1968	155.1	66.3	88.8	43
1969	175.3	69.4	105.9	40

^aSenior institutions include universities and four-year colleges.

Over the past decade the relationship of the enrollment on the Urbana-Champaign campus to the total enrollment of the State of Illinois in higher education has changed markedly. Our enrollments have decreased from 10.9 percent to 8 percent of all enrollments in all institutions, both public and private (Table 5). Our enrollments have also decreased as a proportion of the enrollments in senior institutions, and particularly as a proportion of all public senior institutions. This decrease reflects the development

of the enrollment capacity of the public sector of the entire state system through the State of Illinois Master Plan.

TABLE 5

COMPARISON OF URBANA-CHAMPAIGN CAMPUS ENROLLMENT TO TOTAL
STATE ENROLLMENT AND TO TOTAL ENROLLMENT IN PUBLIC INSTITUTIONS

Year	Urbana-Champaign Campus Enrollment as Percentage of			
	State Enrollment	Enrollment	State Enrollment	Enrollment
	All Institutions Public and Private	All Public Institutions	All Senior Institutions Public and Private	All Public Senior Institutions
1960	10.9	(NO BREAKDOWN BY LEVEL OR INSTITUTION AVAILABLE BEFORE FALL 1965)		
1961	10.7			
1962	10.5			
1963	10.5			
1964	10.1			
1965	9.5	16.5	13.3	26.2
1966	9.3	15.9	12.9	24.9
1967	8.9	14.6	12.8	23.8
1968	8.4	13.1	12.5	22.2
1969	8.0	11.9	12.3	21.1

A comparison of enrollments by level of student in public and private senior institutions (Table 6) shows that the public sector has consistently and significantly increased enrollments at all levels during the past five years. Of prime importance to the Urbana-Champaign campus is the capacity that has been assumed for enrollments at the upper division undergraduate levels and at graduate levels. As the enrollment pressures of the 1970's mount, particular attention must be given to the phasing of institutional maturation to keep step with the demands at sequential levels of enrollment.

The recent role of the Urbana-Champaign campus in the enrollment of students at all levels is summarized in Table 7 which shows that for each level of student this institution has maintained a fairly constant proportion

TABLE 6

COMPARISON OF ENROLLMENTS, BY LEVEL OF STUDENT,
IN PUBLIC AND PRIVATE SENIOR INSTITUTIONS

(All Enrollments x 1000)

Year	Lower Division		Upper Division		Professional		GI		GII	
	Public	Private	Public	Private	Public	Private	Public	Private	Public	Private
1965	55.3	36.6	30.4	46.3	2.6	5.3	13.1	11.5	5.1	3.6
1966	59.5	37.3	33.6	48.5	2.8	5.2	15.5	13.3	5.2	3.7
1967	61.1	36.6	40.9	51.2	2.9	5.7	16.6	13.6	5.9	3.6
1968	66.3	37.7	48.8	49.5	2.9	5.9	18.8	14.2	6.8	3.5
1969	69.4	38.2	55.6	49.3	3.1	5.6	20.2	14.7	7.2	3.7

Percentage of Increase

Year	Public	Private	Public	Private	Public	Private	Public	Private	Public	Private
1965-1969	25	4	83	6	19	6	54	27	41	3

TABLE 7

COMPARISON OF URBANA-CHAMPAIGN ENROLLMENTS, BY LEVEL OF STUDENT,^a
TO ENROLLMENTS IN ALL SENIOR AND ALL PUBLIC SENIOR INSTITUTIONS

Year	Urbana-Champaign Campus as Percentage of									
	Enrollment in All Senior Institutions					Enrollment in All Public Senior Institutions				
	Lower Division	Upper Division	Professional	GI	GII	Lower Division	Upper Division	Professional	GI	GII
1965	12	11	29	14	42	21	29	9	26	72
1966	12	11	30	13	43	19	28	10	23	74
1967	12	11	30	11	44	19	26	10	20	70
1968	11	11	29	11	43	18	23	10	19	66
1969	11	11	28	11	42	17	21	10	19	64

^aSpecial students included in upper division.

of the total enrollments in all similar institutions in the state, both public and private. However, the private sector has expanded at a rate significantly less than that of all senior institutions, and the public sector has expanded at a rate somewhat greater. The net effect has been that the Urbana-Champaign campus, as a proportion of the public sector, has decreased in relative enrollment capacity at all levels.

Future Enrollment at Urbana-Champaign Campus

The future role of the Urbana-Champaign campus in the total state system of higher education must reflect and preserve our particular strengths. Supportive studies indicate that the demand for admission to this institution in the 1970's at all educational levels and disciplines will be significantly in excess of the places that we can make available through sound policies of building, staffing, and funding. Because we desire to maintain and enhance the overall quality of the campus and to avoid sporadic strengths and weaknesses among our varied disciplines, we have considered the complications implicit in large enrollments, as well as the means by which we can most appropriately serve the statewide system of higher education. As a result of much study and deliberation, it is proposed that a limit of 39,200 students be placed on the total number of students enrolled on the Urbana-Champaign campus in 1980 and that future growth in enrollment beyond 1970 be primarily at the graduate and professional level. The enrollment profile of the Urbana-Champaign campus is presented in Table 8 for 1958-1969 and projected for 1970-1985.

Some of the implications of this decision can be examined in Table 9, which compares the projected numbers and mix for the Urbana-Champaign campus as a proportion of projected numbers and mix for the total state enrollment.

TABLE 8

ENROLLMENT PROFILE
 URBANA-CHAMPAIGN CAMPUS, 1958-1985

	Year	Undergraduates			Profes- sionals	Graduates			Total
		Lower	Upper	Total		Begin- ning	Advanced	Total	
Actual	1958	7,665	7,429	15,094	437	2,245	1,700	3,945	19,476
	1959	8,317	7,244	15,561	417	2,262	1,979	4,241	20,219
	1960	9,749	7,254	17,003	428	2,470	2,054	4,524	21,955
	1961	10,391	7,438	17,829	441	2,538	2,251	4,789	23,059
	1962	9,880	8,671	18,551	484	2,801	2,333	5,134	24,169
	1963	9,862	9,412	19,274	586	3,090	2,661	5,751	25,611
	1964	10,637	9,321	19,958	682	3,344	3,036	6,380	27,020
	1965	11,358	8,756	20,114	749	3,441	3,637	7,078	27,941
	1966	11,468	9,318	20,786	836	3,644	3,854	7,498	29,120
	1967	11,505	10,512	22,017	896	3,278	4,216	7,494	30,407
Approved	1968	11,856	11,093	22,949	853	3,597	4,451	8,048	31,850
	1969	11,883	11,548	23,431	866	3,858	4,604	8,462	32,759
	1970	11,500	12,100		875	4,100	4,800		33,375
	1972	11,300	12,650		975	4,150	5,625		34,700
	1974	11,200	13,000		1,200	4,500	6,300		36,200
	1976	11,100	13,000		1,400	5,000	7,000		37,500
	1978	11,000	13,000		1,500	5,200	7,600		38,300
	1980	11,000	13,000		1,600	5,400	8,200		39,200
	1982	11,000	13,000		1,800	5,600	8,500		39,900
	1984	11,000	13,000		1,900	5,800	8,800		40,500
Projected (Approximate)	1985	11,000	13,000		2,000	6,000	9,000		41,000

TABLE 9

URBANA-CHAMPAIGN CAMPUS PROJECTED ENROLLMENT PROFILE
AS PERCENTAGE OF STATE PROJECTED ENROLLMENT PROFILE

Table 1. Enrollment in Higher Education, 1969-1985												
Projection Methods ^a	Undergraduates				Profes- sionals		Graduates					
	Lower		Upper				GI		GII		Total	
	I	II	I	II	I	II	I	II	I	II	I	II
1969 Existing	4.8		10.7		6.3		10.8		41.6		8.0	
1975	3.4	3.2	8.8	8.9	7.0	8.0	9.7	9.2	44.0	38.2	6.6	6.3
1980	2.8	2.8	7.5	7.9	7.3	9.3	9.4	9.3	46.0	42.7	5.9	5.9
1985	3.1	3.1	8.1	8.7	9.8	12.8	11.3	10.9	54.7	46.0	6.7	6.8

^aProjection Method I is derived from the report, Higher Education Enrollment in Illinois--1960 to 2000, which distributes the total projected state enrollment to the educational level of student. This report conservatively projects from 1969 the future enrollments distributed in a constant proportional relationship by level of student.

Projection Method II is derived from a similar report, Projection of State of Illinois Enrollments by Educational Level, which distributes the total projected state enrollment to the educational level of student by techniques which determine what proportion of students are expected to transfer from one level to the next each year. Called "cohort-survival" factors, they were developed from the flow of students in the entire state system for 1965-1968.

The mix of undergraduates and graduates at the Urbana-Champaign campus has changed as the institution has gradually achieved preeminence in its graduate programs. Graduate enrollment has increased from one-sixth of our total student body in 1955 to more than one-fourth in 1969. During those years, 1955-1969, graduate degrees have increased from one-third to almost one-half of all degrees awarded annually. Tables 10, 11, and 12 present the degree of productivity, by level of degree and discipline, of the Urbana-Champaign campus as a percentage of the total state system.

PERCENTAGE OF BACCALAUREATE DEGREES^a GRANTED AT
URBANA-CHAMPAIGN COMPARED WITH STATE TOTAL

YEAR	AG SCI	BIO SCI	COMMERCE	CMNC	ECON	EDUC	ENGR	FINE ARTS	HOME EC	HUMANITIES
1958	77.5	9.6	16.8	64.4	23.3	7.5	46.4	20.6	25.9	10.4
1959	76.8	13.2	14.8	96.9	23.9	8.3	48.9	18.5	31.3	12.2
1960	69.4	15.4	15.3	76.5	15.8	8.2	48.7	19.1	30.4	12.0
1961	96.3	12.9	16.0	76.1	15.0	9.2	45.6	16.0	30.2	12.2
1962	62.0	13.0	19.8	71.2	17.0	8.2	48.3	18.3	29.3	11.9
1963	64.6	14.7	17.7	63.9	16.1	7.8	47.5	18.1	31.1	13.0
1964	62.2	18.9	16.8	82.8	19.9	6.7	44.5	20.7	27.0	13.5
1965	58.3	14.3	13.1	66.1	18.7	6.1	45.0	20.4	32.0	11.3
1966	56.1	13.2	10.9	65.1	16.3	5.9	41.3	16.8	30.4	12.6
1967	54.1	12.5	7.9	56.8	12.5	5.4	40.5	13.7	28.2	12.8
10 yr Ave %	67.7	13.8	14.9	72.0	17.9	7.3	45.7	18.2	29.6	12.2
5 yr Ave %	59.0	14.7	13.2	66.9	16.7	6.3	43.7	17.9	29.7	12.6
YEAR	LANG	MATH SCI	PHYS ED	PHYS SCI	PHYSICS	PSYCH	SOC SCI	VET MED	TOTAL	
1958	19.9	11.6	15.4	28.5	17.6	24.8	11.6	100.0	18.2	
1959	22.3	13.7	18.0	21.9	27.7	23.7	13.6	100.0	18.6	
1960	20.1	12.8	16.2	26.7	21.3	18.2	10.6	100.0	17.9	
1961	19.1	12.2	17.5	19.8	21.4	18.1	10.7	100.0	17.2	
1962	19.9	11.8	19.6	19.2	24.3	17.6	10.6	100.0	17.3	
1963	20.1	15.0	18.6	20.9	29.3	19.4	14.4	100.0	17.7	
1964	19.5	15.1	16.2	22.2	31.4	21.4	12.1	100.0	17.1	
1965	22.5	14.3	15.2	21.9	27.6	18.5	12.4	100.0	16.0	
1966	18.2	12.0	13.2	18.5	26.3	16.5	11.3	100.0	14.7	
1967	18.7	11.7	12.3	19.0	27.1	20.4	11.8	100.0	13.9	
10 yr Ave %	20.0	13.0	16.2	21.9	25.4	19.9	11.9	100.0	16.6	
5 yr Ave %	19.8	13.6	15.1	20.5	28.3	19.2	12.4	100.0	15.7	

^aNo bachelor's degrees were presented at Urbana-Champaign from 1958 to 1967 in HLTH PROF, LAW, LIB SCI, LIR, and Soc Work.

TABLE 11

PERCENTAGE OF MASTERS^a AND/OR PROFESSIONALS^b GRANTED AT
URBANA-CHAMPAIGN COMPARED WITH STATE TOTAL

YEAR	AG SCI	BIO SCI	COMMERCE	CMNC	ECON	EDUC	ENGR	FINE ARTS	HOME EC	HUMANITIES	LIR	TOTAL
1958	100.0	33.1	6.9	21.7	27.8	28.8	57.8	25.7	56.0	17.7	45.7	
1959	100.0	32.0	7.7	21.3	34.3	21.2	59.9	20.7	60.0	21.5	40.0	
1960	96.4	30.9	14.4	30.2	29.9	20.1	63.3	24.1	45.1	20.4	21.0	
1961	100.0	29.5	10.0	12.5	36.2	23.3	58.6	18.4	28.6	20.0	24.2	
1962	97.9	33.0	10.4	29.3	23.5	22.4	66.1	18.3	41.7	19.0	20.4	
1963	87.5	28.5	10.9	22.5	52.6	22.0	54.6	21.0	43.6	17.8	24.7	
1964	74.4	33.0	13.2	26.5	35.3	19.4	50.8	22.5	31.6	17.6	19.2	
1965	65.3	20.0	7.4	41.1	20.5	22.1	47.6	21.5	26.0	15.9	40.4	
1966	64.8	24.1	10.0	25.4	14.9	19.6	46.3	17.5	26.3	14.7	34.6	
1967	58.9	27.9	10.3	36.1	12.4	19.3	40.7	22.3	21.3	15.4	32.8	
10 yr Ave %	84.5	29.2	10.1	26.7	28.7	21.8	54.6	21.2	38.0	18.0	30.3	
5 yr Ave %	70.1	26.7	10.3	30.3	27.1	20.4	48.0	20.9	29.7	16.2	30.3	
YEAR	LANG	LAW	LIB SCI	MATH SCI	PHYS ED	PHYS SCI	PHYSICS	PSYCH	SOC SCI	SOC WORK	VET MED	TOTAL
1958	32.7	15.5	58.2	62.7	53.7	52.3	51.7	18.2	19.2	19.8	100.0	31.5
1959	54.1	12.7	42.2	28.8	37.0	43.5	53.1	17.5	18.8	17.6	100.0	28.3
1960	37.7	12.3	47.2	49.4	41.9	50.0	64.1	25.3	18.3	20.8	100.0	30.1
1961	30.4	14.1	42.5	45.7	43.4	42.7	49.5	19.5	13.4	18.4	100.0	27.7
1962	27.4	14.6	46.3	59.3	45.2	57.5	50.7	18.2	15.7	18.0	100.0	28.3
1963	37.6	13.8	44.2	49.2	40.6	42.3	56.1	18.6	14.4	25.5	100.0	27.3
1964	29.9	15.2	41.4	42.8	33.1	52.7	59.0	19.0	17.9	26.4	100.0	26.7
1965	30.0	14.6	50.2	38.7	30.1	44.4	52.4	22.6	16.3	28.0	100.0	25.0
1966	31.7	16.7	44.3	31.3	23.4	40.7	43.6	15.2	16.5	30.9	100.0	23.1
1967	25.5	18.2	34.1	37.7	26.8	49.3	38.2	28.9	15.3	25.5	100.0	22.6
10 yr Ave %	33.7	14.8	45.1	44.6	37.5	47.5	51.8	20.3	16.6	23.1	100.0	26.3
5 yr Ave %	30.9	15.7	42.8	39.9	30.8	45.8	49.8	20.8	16.0	27.3	100.0	24.6

^aNo master's degrees were presented at Urbana-Champaign from 1958 to 1967 in HLTH PROF.

^bProfessional degrees were presented in LAW and VET MED.

TABLE 12
PERCENTAGE OF DOCTORAL DEGREES^a GRANTED AT
URBANA-CHAMPAIGN COMPARED WITH STATE TOTAL

YEAR	AG SCI	BIO SCI	COMMERCE	CMNC	ECON	EDUC	ENGR	FINE ARTS	HUMANITIES	LANG
1958	100.0	41.3	57.1	100.0	36.8	84.6	53.2	2.6	31.8	63.6
1959	100.0	32.9	42.9	100.0	33.3	57.1	50.0	12.0	28.3	41.2
1960	100.0	37.2	63.6	100.0	35.7	40.0	69.1	25.0	51.2	50.0
1961	75.5	32.1	57.9	100.0	40.0	45.1	58.7	16.7	58.7	50.0
1962	100.0	33.3	72.2	100.0	28.6	56.3	56.1	15.4	48.5	43.8
1963	100.0	33.7	52.6	100.0	43.3	38.3	70.2	24.6	32.2	20.0
1964	97.6	29.9	58.6	100.0	34.6	42.0	53.4	17.6	37.6	37.5
1965	92.3	29.1	48.6	-0-	19.0	41.2	56.6	16.9	22.5	43.8
1966	95.7	23.9	56.4	100.0	31.3	45.1	48.2	19.7	32.7	55.2
1967	93.2	28.5	67.5	100.0	25.6	22.9	49.4	23.4	34.8	40.0
10 yr Ave %	95.4	32.2	57.7	100.0	32.8	47.3	56.5	17.4	37.8	44.5
5 yr Ave %	95.7	29.0	56.7	100.0	30.7	37.9	55.5	20.4	31.9	39.3
YEAR	LAW	LIB SCI	MATH SCI	PHYS ED	PHYS SCI	PHYSICS	PSYCH	SOC SCI	VET MED	TOTAL
1958	-0-	-0-	47.8	100.0	60.5	37.5	23.1	23.8	100.0	45.4
1959	50.0	85.7	60.0	-0-	72.0	50.0	21.4	19.6	100.0	46.9
1960	66.7	80.0	50.0	100.0	65.7	51.4	29.4	32.6	100.0	50.9
1961	-0-	50.0	56.3	100.0	59.1	61.4	31.9	24.1	100.0	47.3
1962	-0-	25.0	48.0	100.0	59.2	28.6	31.7	14.2	100.0	44.7
1963	-0-	80.0	52.3	87.5	52.1	62.5	32.0	18.3	100.0	45.7
1964	-0-	66.7	32.5	100.0	57.4	32.7	44.8	14.0	100.0	42.0
1965	25.0	100.0	40.0	100.0	59.1	52.7	29.2	11.3	100.0	40.6
1966	100.0	100.0	48.8	100.0	44.6	50.6	24.5	19.7	-0-	40.8
1967	25.0	75.0	40.6	100.0	48.5	54.3	18.1	18.2	100.0	38.3
10 yr Ave %	26.7	66.2	47.6	88.8	57.8	48.2	28.6	19.6	100.0	43.5
5 yr Ave %	30.0	84.3	42.8	97.2	52.3	50.5	29.7	16.3	100.0	41.1

^aThe Urbana-Champaign campus granted no doctorates during 1958-1967 in the following fields: HLTH PROF, HOME EC, LIR and SW.

It is interesting to note that the recent 10-year beginning graduate and advanced graduate enrollments for the entire campus resemble past enrollment trends in particular study areas that have evolved mature programs of graduate education. For example, advanced graduate enrollments for the whole campus have just recently (1965) surpassed beginning graduate enrollments, although this phenomenon occurred long before 1958 in the Physical Sciences and Agricultural Sciences at the University. If this can be regarded as an indication of evolutionary development, it is fair to say that the majority of the graduate programs on this campus have achieved a significant level of maturity.

The Urbana-Champaign campus has a recognized major role in graduate education among the institutions of higher education in Illinois and has provided for a very substantial percentage of the Illinois enrollment in graduate and professional programs. Although the growth in statewide undergraduate enrollments will account for a substantial portion of the numerical increase in total enrollments during the 1970's, the fractional increase is projected to be approximately the same for all levels of students. Beyond 1972, a rapid growth in the demand for graduate enrollment is projected for the state as a whole; and it is during this period that the Urbana-Champaign campus must be prepared, as the capstone of the state system of higher education, to expand its graduate programs to meet the need. Obviously, sound advanced planning must precede this expansion.

Planning for Enrollment Increases

Long-range planning for the Urbana-Champaign campus will encompass three definite and parallel periods: (1) a fifteen-year campus land-use plan to permit orderly arrangement of building sites and maximum coordination of the various options which will evolve during the "rolling" ten-year-planning period:

(2) a ten-year flexible campus development plan based on those program priorities that have developed as a result of formal educational policy, which will receive annual review; and (3) a five-year building program to meet firm commitments made in those programs that are marked for immediate emphasis.

The educational policy for the 10-year plan will revolve about twenty-three broad areas of study, which will enable us to recognize that certain study areas are growing faster than others. An annual, systematic study of state and national enrollment and manpower demands in these twenty-three study areas will be made available to those faculty and staff members charged with development of the educational policy for the 10-year plan.

To relate state and national projections and trends in educational degrees to planning at the Urbana-Champaign campus, it is necessary to study those areas or disciplines in the way in which they can be best accommodated to both the administrative structure of the University and the external reporting procedures established by the U.S. Office of Education. Each of the following twenty-three study areas is, for the most part, assignable to a particular college or department in the administrative structure:

Agricultural Sciences	Languages
Biological Sciences	Law
Commerce	Library Science
Communications	Mathematical Sciences
Economics	Physical Education
Education	Physical Sciences
Engineering	Physics
Fine Arts	Psychology
Health Professions	Social Sciences
Home Economics	Social Work
Humanities	Veterinary Medicine
Labor and Industrial Relations	

Physics is treated as a separate area (although it is a physical science) because, at the Urbana-Champaign campus, it is administered by the College of Engineering. Economics is a separate area (although normally considered a part of the social sciences) because, on this campus, it is administered by the College of Commerce and Business Administration. Home Economics is a separate area (although commonly considered to be one of several study areas) because on this campus, it is administered by the College of Agriculture. And Psychology is also a separate area (although chiefly regarded as a social science), because it is treated as a distinct entity in the collection and reporting of statistics by the U.S. Office of Education. This separation of study areas should allow planners more ease in making comparative analyses of them in terms of desired enrollments and degrees. Thus, different rates of growth may be established in these areas, which will indicate the future resources that will be required to support them.

To assist in determining the nature of the future growth and change in enrollment mix by discipline, an analytical study of system "inputs" and "outputs" is progressing (Appendixes II and III). Initial conclusions have been formulated from these studies, as well as a tentative target enrollment and mix for 1980, the end of the immediate (or 10-year) planning period. A revised target enrollment will be distributed to the various disciplines for annual review as a part of the continuous educational policy review.

If existing trends were assumed to continue, the total enrollment on the Urbana-Champaign campus would approach 50,000 students by 1980. However, the Master Plan provides for limited lower division enrollments at public senior institutions beyond 1970. Faculty desires, availability of facilities, and prudent allocation of resources indicate a need to selectively determine upper division and graduate enrollments to best meet the aspirations of the campus and

to complement the needs of the state. Several steps have been taken to arrive at a tentative distribution of enrollments by broad area of study.

A "blow-up" of the current distribution of broad area enrollments was tested. This procedure essentially involved a pro rata distribution of the total future enrollments by level of student to each of the broad areas. The overall enrollment growth rate of the campus was applied to each broad area to obtain the tentative 1980 broad area target enrollments present in Table 13. Some of the implications of this first set of targets are detailed in Appendix IV and in the Campus Planning Office report, "Preliminary Report for 1971-85; Campus Planning for the Urbana-Champaign Campus."

This initial approach does not recognize relative rates of expansion demonstrated by the broad areas on the Urbana-Champaign campus. It does not account for the fact that the study areas mature at different rates in response to implicit differences in enrollment pressures. A detailed analysis of the different growth rates of the broad areas leads to the enrollment distribution presented in Table 14. The resource implications of this distribution will be tested as a part of the annual planning process for 1970-71.

Another refinement of target setting will also be phased into the next planning cycle. It is recognized that student demand may not reflect societal needs. Although some of the enrollment targets in Table 14 have been provisionally modified to allow for the most striking differences evident at this time, more information must be studied in order to determine a proper planning response to societal needs. An integral part of developing educational policy is the development of criteria for enrollment planning. These criteria must be reviewed on a continuous basis, for planning is intended to be an evolutionary process.

TABLE 13

URBANA-CHAMPAIGN CAMPUS 1980 TARGET ENROLLMENT

BY BROAD AREA OF STUDY

Based on "Blow Up" of Current Distribution

Broad Area of Study	Undergraduates			Professionals and Graduates				Total
	Lower	Upper	Total	Prof	GI	GII	Total	
Ag Sci	551	723	1,274	--	282	402	684	1,958
Bio Sci	933	730	1,663	--	232	533	765	2,428
Commerce	425	1,142	1,567	--	440	350	790	2,357
Cmnc	--	475	475	--	170	60	230	705
Econ	75	218	293	--	110	150	260	553
Educ	575	795	1,370	--	775	1,020	1,795	3,165
Engr	1,660	1,960	3,620	--	720	1,390	2,110	5,730
Fine Arts	1,300	1,250	2,550	--	470	390	860	3,410
Hlth Prof	--	--	--	130	--	--	130	130
Home Ec	349	302	651	--	79	22	101	752
Humanities	720	985	1,705	--	293	580	873	2,578
LIR	--	--	--	--	50	30	80	80
Lang	290	425	715	--	216	308	524	1,239
Law	--	--	--	1,000	--	50	1,050	1,050
Lib Sci	--	--	--	--	190	110	300	300
Math Sci	550	650	1,200	--	455	570	1,025	2,225
Phys Ed	385	440	825	--	110	155	265	1,090
Phys Sci	368	432	800	--	209	612	821	1,621
Physics	140	140	280	--	130	260	390	670
Psych	510	750	1,260	--	95	325	420	1,680
Soc Sci	1,010	1,328	2,338	--	305	722	1,027	3,365
Soc Work	--	--	--	--	165	135	300	300
Vet Med	--	--	--	500	25	60	585	585
Others	1,069	120	1,189	--	25	15	40	1,229
TOTAL	10,910	12,865	23,775	1,630	5,546	8,249	15,425	39,200

TABLE 14

URBANA-CHAMPAIGN CAMPUS 1980 TARGET ENROLLMENT

BY BROAD AREA OF STUDY

Linear Extrapolation of Actual Past Enrollments*

Broad Area of Study	Upper	Professionals and Graduates		
		Prof ^a	GI	GII
Ag Sci	720 ^b		200 ^c	480 ^c
Bio Sci	950 ^b		235 ^e	430 ^f
Commerce	865 ^e		300 ^e	410
Cmnc	560 ^k		175	60
Econ	215 ^k		70 ^e	165
Educ	660 ^e		720	1020 ⁱ
Engr	1350 ^b		500 ^g	850 ^b
Fine Arts	1150		370 ^d	385
Hlth Prof	105	130	--	--
Home Ec	300 ^e		50 ^e	30 ^e
Humanities	1240		425 ^j	500 ^j
LIR	--		50 ^k	50 ^l
Lang	580		175	310
Law	--	1000	50	15
Lib Sci	--		190 ^a	115 ^e
Math Sci	680		345 ^e	540
Phys Ed	275		95 ^e	205 ^h
Phys Sci	435		250 ^h	450 ^h
Physics	150 ^b		130 ^b	245
Psych	900 ^b		170 ^k	270 ^k
Soc Sci	1590		400 ^k	870 ^k
Soc Work	--		125	120
Vet Med	--	500	25 ^e	60
Other	275		190	200 ^m
Graduate Pool ⁿ	--		160	420
Totals	13000	1630	5400	8200

*Figures given are those obtained by linear extrapolation to 1980 of actual 5 year fall enrollments from 1963-68, inclusive, unless otherwise noted.

^aEnrollments established programatically in relation to planned expansion of facilities.

^bValue between 5 & 7 year extrapolations.

^cThe total of GI and GII is as predicted; however, the projections give too small a fraction of GI which has been increased while GII has been decreased to correspond.

^dThis does not include effects of change from 5 year BS program to a 4 year BS plus 2 year MS program.

^eTen-year extrapolation which is considered to be more reliable.

^fThis does not allow for effects of medical program.

^gBest guess -- draft perturbations make this unreliable.

^hThe total of GI and GII is the 10-year projection; however, the projections give too large a fraction of GI which has been decreased while GII has been increased to correspond.

ⁱThis is a negotiated figure. The five year extrapolation gives a 1980 prediction of 1550. However, the GII enrollments in Education have been increasing at nearly twice the average rate for the campus and it is felt that this large growth rate can not and should not be maintained.

^jThe 10-year extrapolations are 480 and 650 for GI and GII respectively. However, these enrollments have been increasing at a rate well above the campus average and it is felt that the expansion rate should be reduced as indicated to avoid a large oversupply of Ph.D.'s in the area.

^kSeven-year extrapolation.

^lThe 5-year extrapolation of 370 has been reduced to 310 for reasons cited in footnote j.

^mGuesstimate; data insufficient.

ⁿTo allow for contingencies including, in part, the establishment of new programs.

In controlling enrollments beyond 1972, we will attempt to recognize all the changing and somewhat unpredictable factors that affect the distribution of students by discipline, for example:

- Availability of funds for capital expansion and fiscal operation
- Current investment of resources
- Interdisciplinary strengths and efforts
- Maintenance of quality in all programs
- Manpower needs of the state and nation
- Maturity of particular programs
- National goals and objectives
- Needs and requirements of the state system of higher education
- New program thrusts
- Ordered growth and contraction of disciplines
- Student demand for admission
- Uniqueness within the state of each particular program

Because of the complexity of these factors and their complex interaction, detailed consideration and formulation of the educational policy must be developed continuously and systematically. And decision making, supported by analytical analysis, must be effected through the annual planning and budgeting cycle.

IV. ORGANIZING FOR CONTINUOUS PLANNING A PROPOSED BUDGETING AND PLANNING RELATIONSHIP

The current budgeting system of the Urbana-Champaign campus is responsive rather than anticipatory. Aside from funding for new programs and major improvements, most operating allocations are made on the basis of increased enrollments that have been experienced the previous year. Under this budgeting system a teaching unit must carry increased teaching loads for at least one year before relief in the form of new teaching positions is forthcoming. Thus funds for our staffing resource are allocated only after a demonstrated need has arisen. Similarly, expansion on the campus occurs principally in response to existing deficits in space allocation; and the construction of new buildings proceeds from priorities developed out of documented space needs. The space lag now inherent in our system is such that an operating unit and staff must experience and live with serious space shortage and resultant inconvenience to its educational programs before new space can be justified and assigned.

This budgeting system was developed during the era in which the University was committed to relatively unrestricted growth without a specifically stated program direction. Since the system is primarily designed to fill departmental needs after those needs are firmly established, little or no opportunity exists in such a system for investment in a future defined by a well-developed set of goals and objectives.

The current budgetary system helps to perpetuate the following problem situations:

1. It stifles the interest of department members in developing new and original programs, for unless the department can get

funds under the new-program category of the University's budgetary request, it experiences great difficulty in pooling the funds for initial "start-up" costs associated with the introduction of a new program. The department's only alternative is to incur a high IU/FTE campus teaching ratio for at least one year to demonstrate the actual need for more teaching staff to support the new program.

2. It uses as the guide for assigning increased enrollment funds to a department the IU/FTE campus teaching ratio for the past year as compared to the ratio for previous years. If the ratio for a particular department was not appropriate when data collection first started or if the academic program of the department changed so that the ratio is no longer appropriate, the department must argue for special consideration which cannot always be accommodated.
3. It has formerly assigned to a particular department the funds and positions which in past years have become a permanent part of that department's budget with no effective mechanism for changing those assignments to meet major shifts in current or future college needs. The newly established position-control policy, which states that all vacant departmental positions will be transferred to the budget of the college in control of that department for reallocation, does give the college some flexibility in reassignment of positions and funds from one area to another. However, unless the colleges strengthen their educational planning structures, definitely look to the future, and are willing to shift resources from one department

to another or from one program to another, the flexibility which could be provided by the position-control policy will not be realized.

4. It annually calls on departments to present ideas for new programs. In many instances educational planning at the departmental level is not an organized, on-going process, but is instead a response to that call. And in many instances new programs that are proposed to meet the budgetary deadlines are not new at all but are merely requests for small additions to current programs. When one considers, however, that few of the departments have ever had a new program funded through this process, it is not too difficult to understand the lack of enthusiasm when the call for such programs goes out.

In an attempt to achieve a meaningful relationship between the budgeting and planning functions of administrative units, the following recommendations are proposed:

1. Each department should establish a planning committee for continual review and examination of its goals and achievements. Ideas for new programs could then be forwarded to the respective colleges on a semi-annual basis, thereby providing a channel for systematic and periodic review by the college administration. Since the University's current strength exists because of past departmental entrepreneurship, it would seem logical to capitalize on it. The department's budgeting-planning process should be continual and active, not simply an annual updating of last year's requests and reports.

2. Each college should establish a planning committee for continual review and examination of its goals and achievements. This committee would be responsible for periodic review of all proposals received from departmental committees. The college committee would develop a coordinated college proposal to be forwarded to the Vice Chancellor for Academic Affairs on a semi-annual or annual basis. Recommendations from the college committee should, of course, cut across departmental lines; and, when applicable, the college may even propose programs that have been discussed and coordinated with other colleges. In this manner interdisciplinary efforts would evolve from the grass roots.
3. Colleges should explore all possibilities for initiating new programs by reallocation of their own resources, with little or no help from the campus administration. When the new position-control policy is fully utilized, each college has the power to direct its destiny on its own or with only partial assistance from the Vice Chancellor for Academic Affairs. Changes in educational programs need not be so dependent on new-program money from the State of Illinois if the resources presently available are effectively put to use. If the Vice Chancellor were to receive proposals from the various colleges on a semi-annual basis, however, he would be better informed and prepared to direct the academic program of the campus. The Long-Range Planning Committee for the Urbana-Champaign Campus would provide him with the guidelines and program priorities that would best define the goals to be achieved through the budgetary process, these guidelines having been derived from and

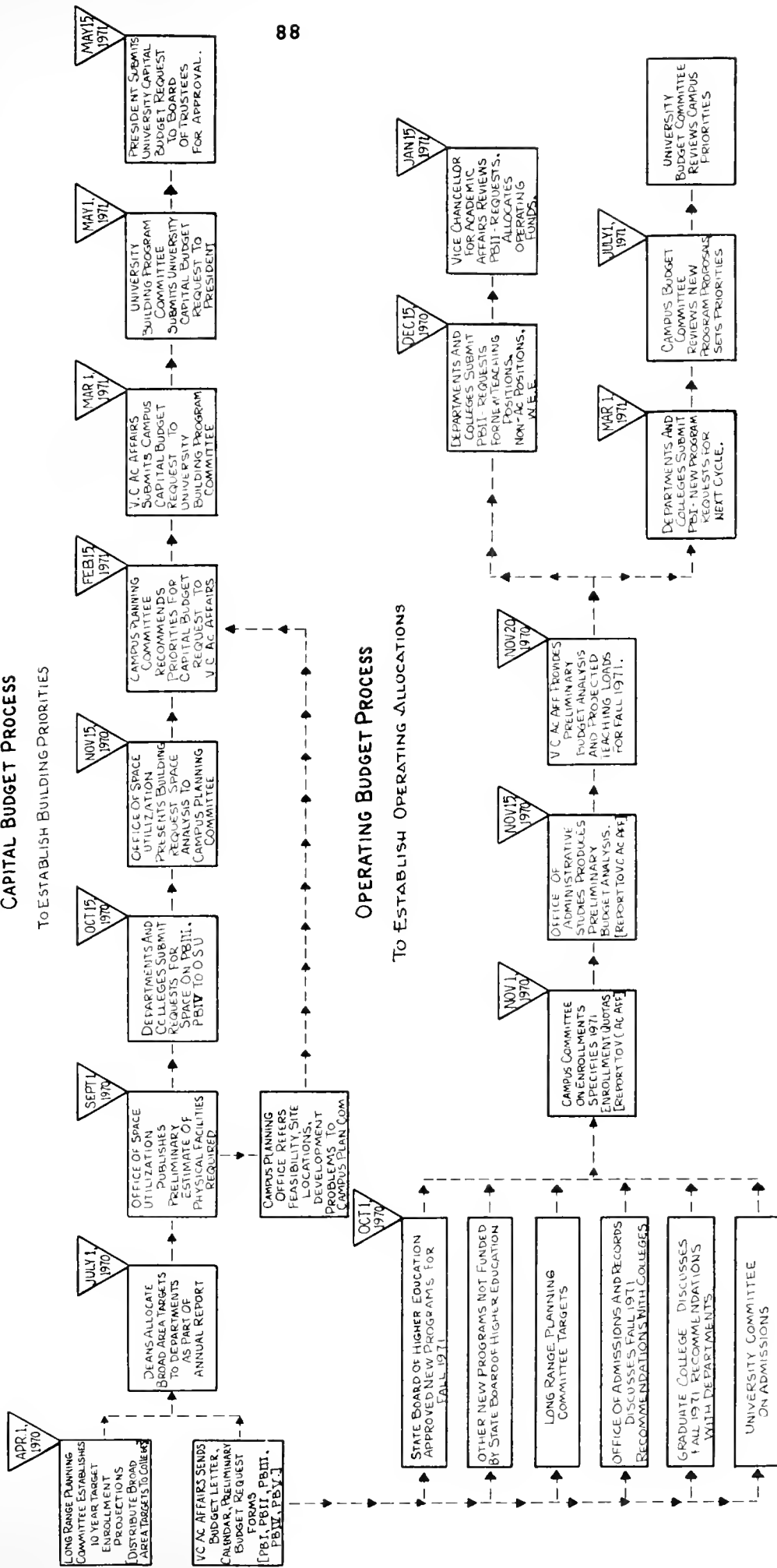
communicated back to the University community. The annual report of the Committee will represent the very best of the programs, ideas, and objectives, or combinations of those components, that have filtered up to the Vice Chancellor from the departments and colleges. It will also provide the departments and colleges with a picture of just where the University is going and will furnish them with an excellent tool for guiding their planning in the coming year.

Planning committees at the department and college level should serve as incubators for new program ideas and reform; they should screen and put in order the priorities of their respective faculties; they should evolve solutions to their particular problems within the limits of existing resources whenever possible; and they should foster imaginative responses to the changing needs of the times. A continuing program of study and analysis will be provided by personnel in the staff offices responsible to the Vice Chancellor for Academic Affairs in an effort to determine performance characteristics against which a department and college can measure its progress toward stated goals and objectives. An initial requirement for enlightened and effective unit-by-unit participation in overall campus planning is a systematic approach to the make-up of the annual operating budget and capital budget for the Urbana-Champaign campus.

Figure 2 blocks out the proposed relationship between the various planning segments of the campus. The annual planning-budgeting cycle will involve a somewhat complex relationship, a system of checks and balances to be coordinated by the Office of the Vice Chancellor for Academic Affairs.

In the process that involves the formulation of the capital budget of the Urbana-Champaign campus, the Vice Chancellor for Academic Affairs is assisted

FIGURE 2
CAPITAL BUDGET PROCESS
To Establish Building Priorities



by the Office of Space Utilization and the Campus Planning Office. These staff offices are responsible for the analysis of projected space needs and projected land utilization derived from long-range enrollment targets. The principal document used to measure these needs is the Annual Preliminary Estimate of Physical Facilities Required.

In the process that involves the formulation of the operating budget of the Urbana-Champaign campus, the Vice Chancellor for Academic Affairs is assisted by the Office of Administrative Studies. The personnel of this staff office is responsible for the analysis of projected operating budget requirements derived from enrollment quotas established for the following fall. The principal document used to measure these needs is the Annual Preliminary Budget Analysis.

Both budget processes involve faculty-student participation through the following standing advisory committees:

1. The Long-Range Planning Committee for the Urbana-Champaign Campus sets the long-range target enrollments that precede the formulation of the capital budget. The broad responsibilities of the Committee involve all aspects of establishing future objectives, as well as the means to achieve these objectives. The Committee's function includes analysis of present and future conditions for the pursuit of overall quality and excellence of the educational enterprise on the campus. Its deliberations and recommendations are necessarily expressed in quantitative long-range targets, but these targets represent decisions based on thorough academic analysis and examination.

2. The Campus Planning Committee is assigned the responsibility for the orderly physical development of the campus to meet existing and future needs of the educational mission. The essential function performed by this Committee is the marshaling of physical facilities in such a way as to anticipate and meet enrollment pressures and organizational needs. Its deliberations are formulated as a recommendation for building priorities and as a policy for the physical expansion and aesthetics of the campus.
3. The Campus Committee on Enrollments initiates the operating budget procedure by setting enrollment quotas for the following fall. This Committee reviews and considers all factors influencing the enrollment of students--including initiation of new programs, long-range enrollment targets, recommendations of the Office of Admission and Records concerning undergraduate enrollments by college, recommendations of the Graduate College concerning graduate enrollments by department, and recommendations of the University Senate Committee on Admissions. From these recommendations, the Committee on Enrollments advises the Vice Chancellor concerning the total enrollment quotas to be admitted in the fall of the following year.

College and department input precedes all the faculty-student committee deliberations described in the foregoing. The long-range enrollment targets are established within broad areas of study to assure the overall development of the educational mission in a manner that preserves the unique comprehensiveness of the Urbana-Champaign campus and that best serves the public. Each major unit is responsible for the order of its particular priorities in building and remodeling, new programs, and increased teaching loads.

There are two documents designed to create the necessary communication between each operating unit and the Vice Chancellor for Academic Affairs on the Urbana-Champaign campus:

1. The Vice Chancellor's budget letter, which initiates the annual planning-budgeting cycle, provides planning guidelines in the form of campus priorities. The budget package forwarded with the Vice Chancellor's letter consists of preliminary budget request forms (PB I-V) designed to assist each operating unit in evaluating the future resource requirements of its particular capital and operating priorities.
2. The annual report currently required of all units will contain the distribution of broad area enrollment targets to departments; it will contain an updated statement of the goals and objectives of the units; it will measure the accomplishments of the preceding year; and it will contain an explicit statement of educational program priorities.

Aside from the creation of college and department planning committees where none existed before, the proposed budgeting and planning system has been designed to utilize existing procedures and committees. It provides for continuous planning by the campus and each of its units. It attempts to provide the necessary time required for decision making based on sound prior analysis. Most significantly, the proposed planning-budgeting procedure provides the means to allocate resources to programs in a manner that anticipates controlled enrollment of students.

V. QUANTIFICATION OF CAMPUS PHYSICAL PLAN AND LAND-USE PLAN

Environmental Principles

The complex mission and role of a great university are mirrored in its physical setting. The space it occupies can be described in terms of the physical dimensions of its land and buildings, its location and how each of its myriad components is related and linked in a cohesive system, and finally its functional and aesthetic quality as a campus which contributes to the beauty and prestige of the community and the state in which it is located. A great university must also be described in terms of its capacity to change.

The setting for institutions of higher education today may be compared in standard of quality with certain historic exemplars in which cultural values, material resources, technology, and imagination came together to form an environment par excellence for learning. The outstanding examples of great universities in the past have been notable for their sensitive evolution, academically and environmentally, with time and the completeness of their integration with their community. While leading examples of modern university building reflect the sensitivity of the past in many of the same ways, they must also incorporate such twentieth-century needs for communication systems, movement networks, environmental controls, laboratory and research facilities, space for social-intellectual linkage, and a flexible physical plant in their architectural and systems design.

On most campuses the tradition still persists that monumental buildings are valuable, representing what might be called "thing-subject" spaces in the separate autonomies of departments, colleges, and institutes. Although many gracious and beautiful but static campuses exist all over the world, most are

experiencing difficulty in accommodating students and in changing their programs to meet the demands of students for less emphasis on a materialist-technological ideology to greater preoccupation with people, social problems, and the arts. This swing from "things" to "people" will have great significance in changing the face, form, and substance of the university. "People spaces" for random informal conversations in lobbies, corridors, stairs, lounges, and so forth, have been negatively regarded in the past and not usually counted in planning "net assignable square feet" of space.

With the awakening to social values and recognition of the importance of all kinds of places for spontaneous social-intellectual activity, these areas, formerly regarded as negative, have become very positive as the "in-between realm" in Buber's "I-Thou," and must be treated, perhaps, as the most important of all spaces in the student's university experience. Corridors may be designed with alcoves to accommodate eddies of people going to and fro, changes in floor levels could become major and minor stages for exciting personal dramas. Semi-private offices, seminar rooms, and lobbies may be so molded as to accommodate all types of interchange from the intimate to the gregarious without sacrifice of space needed for instruction, research, and service.

The functional qualities of spaces created in response to the complexity and diversity of today's knowledge must be correspondingly intricate and sophisticated. It is, therefore, difficult to make a comprehensive list of the spatial qualities that will fit every situation. For instance, the criteria for developing a first-class biochemistry laboratory differ in every detail from those used to create a seminar room in the humanities. In either case, however, the successful use of the space depends on its privacy, acoustics, lighting, size, and appearance. Its location in the traffic pattern, its furnishing and equipment, and its capacity to change with need are also to be judged in determining

its functional quality.

Spatial qualities also include such aesthetic values as form, scale, appropriateness of structure and materials, and compatibility to the natural setting. But these aesthetic qualities are more and more dependent on refinements of function, and solution of today's spatial needs must also take visual, acoustical, and tactile media into account. Spatial environment now has many more signs and symbols than in the past: graphics, sounds, instrumentation, environmental controls, and identity-giving furnishings and equipment. How well these factors work in and around a given space expresses its functional character and identity, as well as its aesthetic quality.

A problem is that these spatial qualities are appreciated by students, faculty, alumni, and public at a highly detailed, restricted, subjective, and personal level, while the quality of the university's physical setting as a whole is generally regarded with detachment and disinterest. Concern for spatial quality in the past has been limited to the preoccupation each individual has for his own personal environment. This is no doubt the reason why space is such a scarce commodity in most universities and has become a status symbol for those who have been successful in competing for it.

Although some administrators, students, faculty, and community members of Urbana-Champaign have attempted to devise an overall strategy for optimization of spatial quality, they have failed. What is required is a "start-from-scratch" position from which to formulate comprehensive, imaginative, and workable spatial policies and to win widespread support of them.

The first principle of spatial policy concerns the most familiar and sophisticated system of analyzing space needs related to enrollments and student mix. Standards developed from these analyses and experiences serve as a pragmatic basis for planning the physical aspects of future growth and change in the Urbana-Champaign campus, with the expectancy that modifications will occur

and, as an extrapolation of the status quo, are primarily useful in the prediction of futures. Since the system has developed empirically from observations of widely varying conditions in the many departments and divisions of the University, it needs to be supplemented by new quantifiers and qualifiers to be determined from those University goals and objectives that include multidisciplinary and interdisciplinary considerations, collective student-faculty-staff life-style changes, and all-campus interaction systems.

The second principle of spatial policy depends most fundamentally on broad-scale relationships of location to function. As suggested previously, a well-developed educational plan should articulate not only the overall goals and objectives but also the concepts of interrelationships among traditional academic units, emerging centers, and institutes, as well as the concepts of the changing relationships between individuals and groups within the University community.

These concepts will affect spatial policy at all levels, but at the large-scale campus-wide level, they will include such considerations as linkage systems to provide all-weather protection; use of open space for instruction, recreation, and physical education; concentration or dispersal of library resources and instructional facilities like PLATO; concentration or dispersal of student and faculty meeting and Union facilities and services. Density of circulation at formal and informal gathering places, at service and reception centers, and in other areas of pedestrian concentration will be studied during various time cycles and will assist enormously in assessing need in future development. It is possible that spatial policy **derived** from this kind of study of pedestrian spaces will not only make density of circulation more manageable but will also lead to the more positive use of lobbies, stair landings, entrance platforms, and corridors, as "stage sets" in which some of the more

gregarious socio-psychological needs of the University community for interaction may be met.

Spatial policies involving access, terminals, and parking facilities for both public and private vehicles depend on location of and relationship between major academic and service units. For example, the demand for a more highly developed traffic and parking system is an obvious corollary of the change in student mix, which reflects a greater proportion of graduate students.

Current air pollution problems and the study of air rights, land use, and other situations related to traffic and parking could lead to the development of high-quality public conveyance systems, and a policy that would permit presently undreamed of freedom in land use. New forms of pedestrian-assisted movement on campus and high-speed vehicles moving in an enclosed system to connect with airports or other satellite locations are very real possibilities.

The enormous potential of PLATO, or other as yet undeveloped systems of learning, will drastically alter traditional notions of educational space. This impact on spatial policy will not only affect the Urbana-Champaign campus but will also influence the formation, or reformation, of extension systems throughout the state and beyond. If direct human communication, the most desired innovation in educational space, were to be achieved throughout the state, it would revolutionize educational spatial policy.

A third principle of spatial policy requires acquisition of land adjacent to the University and involves relationships between the university and the community. Expansion proposals of this kind at the Urbana-Champaign campus will have to undergo much more scrutiny and study than heretofore because of the recognized need to interlock university/community planning. It is therefore desirable that alternatives be studied, preferably in the context of the

specific campus zones affected, although general inferences of expansion policy at the campus edges may be drawn wherever the University has an outpost, as well as in the Urbana-Champaign community.

A major trend that will affect campus-wide spatial policy is the increase in the variety of housing which, like parking, is a problem that will increase with increased graduate and married student enrollment. The campus housing policy, which in the past has been considered by some as competing with community housing, is a sensitive area and as such exerts an important influence on expansion. Greater overlap should be encouraged between campus and community development in this area.

Policies relating to housing, traffic, pedestrian circulation, and campus edge condition are perhaps best worked out in the planning process by study of each of them in the context of its geographic zone. For example, several studies of alternatives could be made of a particular college area in which the several spatial issues discussed (housing, traffic, pedestrian circulation, campus edge condition) would interact in different combinations. One of the most obvious advantages of expansion on a zone basis, in comparison to the present practice of building-by-building accretion, is that greater efficiency, economy, and better design would result.

A fourth principle of spatial policy involves small-scale considerations. The enormous number and variety of single and small-group spaces (offices, carrels, laboratories, computer terminals, conference rooms, and so forth), need to be recognized as a collective target for more efficient use of construction equipment. The degree to which these kinds of spaces are flexible is important in knowing to what extent their use can be increased. A study is urgently needed to determine what part of total space needs they take up in relation to that part of the total that is highly specialized.

Study of small-space needs in relation to pedestrian circulation systems, control points, large informal group-gathering space, instructional materials, and living areas--as well as their flexibility and convertibility--should proceed as should the study of large-group spaces for lectures, demonstrations, seminars, and classroom activities.

Two other important principles of perhaps overriding importance remain. One is that the innovative and experimental educational programs that respond most directly to the future needs of society should be developed in space that is equally innovative and experimental. This policy would affect the use of existing space and call for experimental new construction. It would also encourage use of the most advanced industrialized and system building processes.

The final guiding principle is that all educational spatial policy should be based on the capacity to change the physical environment of the campus at a rate that matches changes in the educational plan. That this capacity and rate of change have been sluggish in the past reflects the fact that the rate of change in educational philosophy has also been too slow to keep pace with modern life. It should be obvious that both of these rates of change must be accelerated.

Leadership in achieving a breakthrough in environmental quality must be accepted by the University. Because of its broad and heterogeneous social structure, its resemblance to a small city, and its avowed search for truth, it is reasonable to expect that an ideal environment could first appear in the university setting.

An environment of intellectual and spatial richness is certainly imaginable in mid-America, and more specifically in Illinois, because it lies at the world's center of both agricultural and industrial productivity and wealth. With these unprecedented resources, the opportunity exists to build for the

first time in history a scintillating man-made environment on a vast scale.

Environmental Policies and Procedures to Guide Campus Planning

The responsibility for the physical planning and building programming of the Urbana-Champaign campus rests with the Campus Planning Office, the development division of Physical Plant Planning and Construction. In creating a development plan for 1971-85, the Campus Planning Office drafted a statement of policies that was used in formulating the document, Preliminary Report--1971-85 Long Range Plan for the University of Illinois, Urbana-Champaign Campus. The report contains a major section that presents a detailed statement of assumptions and guiding policies.

The initial long-range enrollment targets developed for the Urbana-Champaign campus were tested by these assumptions and guiding policies in order to examine the expected results of the projected targets. The quantification of this test is reported in the Preliminary Report. It is essential to realize that the report is "preliminary" in every sense and that it is a working document intended for analyzing potential space and land-use problems and for developing new approaches to physical expansion of the campus. Moreover, what has already been developed represents a systematic projection of the future based on existing environmental policy. Refinement of environmental policy will be the result of study of alternative means of achieving educational policy. As studies are carried forward and campus development proposals are reviewed by the campus community, the environmental policy guidelines will be revised and expanded.

Procedures relating the educational plan to physical planning of the campus have already been carried through a preliminary testing phase. As a result, alternative studies are proposed and are considered as part of the continuous review process.

1. Projection Method. The first step in physical planning for the campus is to take the projection of needs derived from a future enrollment estimate and determine its implications in terms of spatial development. Existing environmental policies have been used to guide the location and extent of spatial development.

These projections of spatial development are presented in diagrams and in illustrative study models in the Preliminary Report.

2. Testing Preliminary Plan. The plan derived by projecting spatial needs will be tested through analysis of its overall impact and implication. The results of this analysis will help to identify major spatial deficits as well as to reveal areas of strain on pedestrian circulation, parking, and utility systems.

This analysis is presented in diagrams and in analytical tables which reveal the nature and location of anticipated problems.

Possible alternative approaches will be explored and defined by further study. The preliminary plan, which shows what would be expected to occur from projections of needs under present policies, provides a "base statement" of what the future campus might be. Alternative futures are described tentatively to illustrate the potential in varied and imaginative approaches to problem solution.

3. Reviewing Process. Presentations of developments in physical planning for the campus will be made to the responsible administrators, to the Long-Range Planning Committee, to the Campus Planning Committee, to representative faculty and student groups, and to colleges. These presentations permit and, indeed, invite any and all individuals or groups to suggest further alternatives and to express their opinions

as to those issues that should be intensively studied.

There will also be presentations open to review by any interested citizen, student, or faculty member so that the best judgments and most thoughtful proposals of the greatest number can be incorporated in the next cycle of the planning procedure.

4. Alternative Studies. Through the procedures that have determined alternative ways in which the campus might be developed in the future, a set of key studies will be defined. These studies would be directed toward resolving of major spatial problems that might result from the projection of future needs and toward achievement of the optimum environment for the academic community of the future.

To illustrate the nature of alternative studies, the following subjects have been identified in the Preliminary Report as possible studies:

- (a) Satellite Campus. The Willard Airport offers potential bases for a major University complex or campus satellite. A rapid-access corridor could be developed between Willard Airport territory and the main campus by developing a route through the South Farms. A limited-access route could assure movement from the main to the satellite campus in ten to fifteen minutes.

As an alternative to the continued concentration of development in the main campus, the study of a satellite would explore the following questions:

- (1) Which units could operate as effectively at the satellite campus?
- (2) Which units would benefit from the freedom for development on vacant land, including the option of holding space for future needs?
- (3) Which units or activities would be more effective at the satellite location if they were brought together?
- (4) What would be the advantages and disadvantages for housing expansion, for physical education activity, and for socio-cultural activities at the satellite location?

- (5) What savings might be achieved in the building of new facilities?
 - (6) What savings in reduced traffic congestion or in lowered cost of parking and circulation facilities could be achieved at the main campus?
- (b) Mass Transit. Assuming that the development of the main campus were to continue with higher and higher intensities, what are the advantages of expanding use of mass transit? Mass transit could be developed on the main campus with maximum convenience as to routes, headways, and equipment, and would permit strict limitation on the use of personal motor vehicles.

The study of mass transit would consider:

- (1) The relative convenience for faculty, students, and visitors.
 - (2) The alternative costs of land, construction of equipment, rights of way, and operation.
 - (3) The potential use of new technology.
 - (4) The implications for the University and the community if satellite campuses are developed and if the system is designed to serve the Urbana-Champaign community and not just the campus.
- (c) Residential College. As an alternative to continued separation of academic housing and sociocultural facilities, an integrated college unit would be studied. This might involve the remodeling of an existing complex such as the Men's Residence Halls (1) to expand its use to include sociocultural features, (2) to introduce instructional and research activity, and (3) to provide a variety of housing types in one complex.

The same program for an integrated college unit could also be tested on a site at Willard Airport or south of Florida Avenue. The essential issues are the relative benefits in intellectual environment and social interaction, and the relative costs of construction and operation.

- (d) Bridging Units. The development of interdisciplinary and multidisciplinary centers in response to problem-oriented educational and research programs, plus the possible increase in instructional resource terminals (for example, PLATO) and locations for sociocultural interaction, indicates the need to develop bridging units of building linkages between the main campus areas as well as within certain peripheral areas where relationships between academic, research, and public service units are high. For example, the concept of bridging units would test the feasibility of distributing library and student-activity space in multiples in a linkage system as an alternative to their further concentration in central and main union facilities.

NOTES

¹Thomas E. Donnell, 1919-1930, and Leon D. Tilton, 1867-1919, History of the Campus of the University of Illinois, 1867-1930, University Press, Urbana, Illinois, 1930.

²Report of the Committee on Future University Programs (March 15, 1945).

³Educational Directions at the University of Illinois, A Report by the University Study Committee on Future Programs (January 1963).

⁴Projection of Enrollment in Institutions of Higher Learning in the State of Illinois, University Bureau of Institutional Research (June 1969).

⁵Progress Report of Determination of Enrollment Projections for Institutions Within the State of Illinois, University Office of Space Programming (June 1969).

⁶Projecting Illinois Degrees Needed, University Office of School and College Relations (June 1969).

⁷Projection of State of Illinois Degrees and Enrollments by Level and Area of Study, University Office of Administrative Data Processing (June 1969).

⁸G. J. Froehlich and R. C. Carey, Higher Education Enrollment in Illinois, 1960-2000 (December 1969).

⁹Residence and Migration of College Students, State and Regional Data, Washington, D.C.: U.S. Office of Education.

¹⁰Extension and Public Service in the University of Illinois, Phase II Report (August 1968).

¹¹Extension and Public Service in the University of Illinois, Phase I Report (November 1967).

¹²Lee A. DuBridge, President Nixon's Science Advisor, has served on the national advisory boards of virtually every federal agency significantly involved in sponsored research on American campuses, including the National Science Board.

¹³The following departments were rated: Biological Sciences (bacteriology/microbiology, biochemistry, botany, entomology, pharmacology, physiology, psychology, and zoology); Physical Sciences (astronomy, chemistry, geology, mathematics, and physics); Engineering (chemical engineering, civil engineering, electrical engineering, and mechanical engineering).

APPENDIX I

SEVERAL RECOMMENDATIONS OF THE 1945 COMMITTEE ON FUTURE PROGRAMS

1. Up to the time of the 1945 report, a large percentage of Illinois students graduating in the upper quarter of their high school class did not enter any institution of higher education. A majority of these students were from families with small incomes. The Committee recommended increased financial assistance to Illinois high school graduates and it recommended significant changes in admissions policies. All applicants for admission to the University from that time were to be selected on the basis of their earlier school achievements, test scores, and other standards to be developed. Students were to be selected for admission according to their scholastic abilities rather than upon their ability to pay. The Committee recommended that steps be taken to eliminate as rapidly as possible the economic barrier to college or university attendance.

The Committee on Future University Programs proposes the adoption of improved methods of admission based on the aim of selecting and guiding prospective students into educational programs in accordance with their individual abilities, needs, and interests. The well-known fact that considerably over half of all students entering the University fail to complete any organized program of study is considered evidence enough to challenge traditional methods of admission based solely on graduation from an accredited high school with an arbitrary pattern of courses. There is evidence that financial resources have more to do with determining who shall apply for entrance to the University than the possession of attainments and capacity to use higher education in the individual and public interest. The welfare of the public, as well as that of the individual, is sacrificed in such a situation.

2. In addressing itself to the inadequacies of the University's programs in general education, the Committee set forth an important principle which has provided the basic guideline for the development of programs since 1945.

To present courses ... as a mere surrogate for adequate ... training rather than as work of genuine university quality would be to nullify the Committee's (University's) intentions: ...programs are not proposed as a series of soft options for students unable to meet the proper educational standards of the University. Their support here rests on the conviction that there need be no conflict between adaptation of educational programs to varying student needs and the legitimate demands of scholastic discipline.

3. The Committee recognized the value of and the need for strengthening of the Social Sciences and the Humanities. Up to the time of the Second World War, the University was just beginning to develop in these two areas programs of research, teaching, and public service. The Social Sciences and the Humanities became an early "casualty" of the enforced disruption of liberal education by the war. Interruption of research, diversion of scholars to the teaching of technical and scientific subjects and to nonacademic tasks, and an almost complete stoppage in the training of graduate students, combined to produce a critical situation in which the restoration of the Social Sciences and Humanities even to their former effectiveness called for extraordinary efforts of faculty and administration.

... for many years the University of Illinois has given more support to technical research than it has to research in those areas of knowledge having to do with human beings in their manifold social and cultural relations. The former has been reasonably well supported with federal, state, and private funds; separate agencies, such as the Agricultural and Engineering Experiment Stations, have been created to conduct research in their respective fields. Certain departments regard research capacity as an essential qualification for teaching. Reasonably adequate facilities and assistance have been provided for research in the technical areas. None of these conditions, however, obtains on an adequate scale in the non-technical fields. They are inadequately financed and not organized or staffed in a manner conducive to the attainment of maximum productivity in research.

... the high place earned by the University has been largely the result of its contributions to the natural sciences and their practical applications.

In the broad fields of social and economic welfare and the liberal arts more remains to be achieved. It is beyond dispute that the University has not been making contributions to the social and political welfare of the community commensurate with its outstanding services to science and technology; nor is its national rating in this field one which the University can afford to regard with complacency. This is a condition which obtains equally in the fields of research, teaching, and public service.

As a people we are now far enough advanced in our scientific development to have it within our power to overcome the most pressing evils of natural scarcity by the application of scientific knowledge to the arts and techniques of production. Furthermore, we can within rather broad limits extend the boundaries of scientific knowledge in many directions according to our conception of social needs and relative values. But when it comes to such questions as the social ends to be sought by education and research, the adjustment of social institutions to the new technology, the training and development of youth for the responsibilities of citizenship, and the baffling problems of social and cultural relations both on the national and international levels, we are by contrast woefully unprepared to deal effectively with such issues. At the University of Illinois we are not now prepared, either in respect to organization, staff, or budget, to make a significant contribution to the solution of these urgent problems.

This situation suggests that it should be a major objective of University policy to raise the level of research achievement in the arts, humanities, social sciences, and education to the level of excellence already attained by our most distinguished technical departments. Such a program, if implemented in a manner calculated to insure success commensurate with the importance of the issues involved, will necessarily require thorough planning with changes in organization and amplified personnel. It will demand a considerable increase in funds. Unless this is done, the present disproportion between our research productivity in technical and nontechnical fields will not only continue but will become still more pronounced. The new programs should be financed from additional research funds rather than by the reallocation of present inadequate funds.

4. The Committee devoted substantial effort to the establishment of certain guidelines with respect to staff-building programs.

....what essentially characterizes a great university is its ambition to be a society of scholars and students united in the pursuit of truth and wisdom. Such distinction as the University of Illinois already has achieved has been due to the presence upon the faculty of men who were able to make of this ideal a living reality; scholars conforming to the strictest canons of research who were able to communicate the fruits of their wisdom in language which common men and women could understand, technical practitioners not bound by the restricting interest of a single craft or profession, men prepared to educate their students by educating themselves in the principles and values without which a democratic civilization cannot survive.

If the University is really to be the center in which the State of Illinois is able to bring to bear upon its most urgent and enduring problems the continuing and cooperative contribution of impartial intelligence and social consciousness, the presence of such men is vital. The Committee can make no more emphatic nor more important recommendation. The quality of the University depends inescapably upon the quality of its staff. If the University can create the conditions to attract men able to conceive and prosecute such programs as are here envisaged, it will have a secure, expanding, and productive future. The postwar period will provide conditions in which educational advance will be imperative; it remains for the University to understand the nature of its opportunity--and to marshal its resources to meet the challenge.

The Committee is in complete agreement that any new or expanded program which the University undertakes can be successful only to the extent that it is placed in the hands of personnel of highest competence. This will require rigid selection, favorable conditions for individual accomplishment, and adequate rewards in the form of recognition, advancement, and salary scale.

The Committee on Future University Programs also endorses the recommended policy of making salaries correspond to the productivity of the individual whether his work be research, teaching, public service, or administration. Nothing short of a conscientious effort to ascertain a man's ability to reward him accordingly will maintain a good staff.

5. In order to promote the accessibility of higher education to all able youth, the Committee urged the University of Illinois to direct its attention toward articulation and coordination of the activities of the

University of Illinois and those of other educational institutions in the State. The University was directed to provide educational leadership based upon continuous study and research concerning the educational needs of the State at all levels and to exercise this leadership in cooperative ventures with all institutions concerned.

The Committee recognized a need for teacher training programs for the entire spectrum of the state system of education in order to assure the continued growth and development of the children and youth of the State.

Any educational institution has a unique and insistent need for knowledge concerning the processes and means by which the human being is educated. This is particularly true of a University which not only functions as an educative agency for adolescent and adult minds shaped by varied factors of inheritance, environment, and precollege education, but which has as one of its largest activities the education of teachers.

The Committee described the position of the University of Illinois in the State, its relation to other institutions of higher education, and the proper development of its programs in the light of its duties and obligations as the "capstone" of the State's educational system.

The University of Illinois recognizes its right and its duty to exercise leadership in the field of publicly supported education at all levels, but especially at levels beyond high school. It believes that this leadership should extend even to a program of public education in favor of a stronger system of training for as many youth of the State as can profit from that training.

6. The Committee envisioned a total system of higher education whereby a "proposed system of junior colleges shall be under the control of a State Board of Education" and it called for the development of another State University to be administered by the University of Illinois.

Throughout the 1945 report of the Committee on Future Programs there is evidence of a growing awareness of the duty of the University of Illinois to supply the needs not merely of the group of students in residence on the campus, but in equal measure those needs of the state as a whole.

The University has as its first large responsibility the education of its undergraduate and graduate students; but it is becoming increasingly evident that it can justify the outlay made by its large constituency only by the extent to which it is prepared to diagnose and satisfy the immediate and long-term educational needs of the state as a whole.

A further trend of the utmost importance is the extent to which the University is being compelled to initiate educational advance. Many of its contributions have in the past been made as direct response to the demands of interested groups in industry, commerce, and the professions. Full awareness of its developing responsibilities would require it increasingly to sponsor programs which are, in its own expert judgment, conducive to the long-term welfare of the community. It will not be enough to transmit the social and intellectual heritage of our predecessors; true conservation in the critical years ahead will require the desire and the capacity to make intelligent readjustment to changing conditions. We may say then that the University is entering upon a stage of development in which the dominant emphasis can and should be upon energetic and planned educational initiative in the service of the needs of society as a whole. The University has long outgrown the time when it could afford to restrict its attention merely to those young people who were under its supervision. If it is to play a full part in the future, it must be prepared to assume vigorous leadership in the extension of educational opportunities.

7. The Committee recognized that scholarship and research are a special responsibility of an educational institution on the university level and that this activity must be nurtured to the greatest possible extent. It stated that "No university can afford to neglect creative scholarship and research in any field for which it professes competence

to teach." The Committee asserted that every discipline shared the responsibility to develop and nourish complimentary programs of research, instruction, and public service and that the University as a whole could make its greatest contribution to the advancement of the public welfare if it confined its efforts principally to fundamental, as distinct from "commercial", research.

8. The Committee was impressed with the number of cases in which new programs overlapping present departments had been promoted either within the University or from the outside by groups desiring educational service. It called for "councils" to administer these inter-college and inter-department programs in research. These councils were to be organized as cooperative and complimentary organizations designed to bring specialists into a new and desirable relationship either for a temporary or an enduring purpose. The councils were to be attached to the University Research Board and were to be administered by a chairman and an executive board of participating faculty.
9. To assure that the University would have the flexibility and responsiveness required to meet the challenge of participating in unforeseen new areas of research, the Committee established the principle of a substantial University Research Fund under the direction of the Research Board.

It is agreed that centrally administered funds which can be turned to the support of research in any areas for which a recognized need arises is necessary to meet conditions that may prevent the initiation of such research programs by established departments or other specialized research agencies. The Committee believes that these centrally administered funds should be very much larger than those available to the Research Board in the past and that commitments should be for relatively short periods in order to preserve the flexibility which is important to their purpose.

The Committee feels that the proposed expansion of the research supported by the University Research Fund could and would stimulate research in all branches of the University. The funds would probably be used largely in those divisions of the University that do not now possess organized research agencies. Furthermore, the creation of a greatly increased University Research Fund should not be interpreted to mean that a permanent organized research agency could not be established in any division if a need for it arises.

10. In its recommendations, the Committee stressed the fact that its report was "preliminary" and did not pretend to cover all the program needs of the University and the society during the next decade.

Exhaustiveness of investigation and finality of treatment are not to be looked for in a study of programs of an institution evolving in a rapidly changing environment ...

The 1945 Committee on Future Programs recognized that planning was an on-going process, and to assure that the process received the continuous attention of the faculty the committee recommended that a new standing committee of the Faculty Senate be created, this new committee to be entitled the "Senate Educational Planning Committee."



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